VOLUME NUMBER IX
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Operation, Installation, Service, and Parts Manual for

TANDEM CABLE ROLL-OFF HOIST

MODEL: _____

DATE: _____

SERIAL NO: _____

! WARNING !

If incorrectly used, this equipment can cause severe injury. Those who use and maintain the equipment should be trained in its proper use, warned of its dangers, and should read the entire manual before attempting to set up, operate, adjust, or service the equipment. Keep this manual for future reference.

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PART NO. 7011AO

VOLUME NUMBER IX
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TABLE OF CONTENTS

PREFACE **PAGE**

Table of Contents i
Introduction iv
Customer Service – Warranty – Technical Support v
Limited Warranty vi

OPERATION AND SAFETY **SECTION O**

Owner/Employer Responsibility O:1
Operator/Employee Responsibility O:3
Lockout Procedure Guideline O:5
Operating Precautions O:7
Maximum Container Weights O:9
Recommended Loading Procedures O:12
Dumping and Unloading the Container O:23
Positioning Container O:24
Cable Instructions O:25
Pintle Hook Operation O:26

MAINTENANCE **SECTION M**

Introduction & Preventive Maintenance Comments M:1
Quick Reference Preventative Chart M:2
Suggested Preventive Maintenance M:3
Lubrication Charts M:5
Disassembling Single Stage Cylinders M:10
Disassembling Telescopic Cylinders M:15
Adjusting Head Nuts & Bleeding on Telescopic Cylinders M:20
Flushing Oil from Hydraulic System M:21
Pintle Hook Maintenance
(See Pintle Hook Operation & Mounting Sections O:23-24)

Note: Detailed component information can be found in the parts section of this manual for individual components and optional equipment.

HOIST MOUNTING **SECTION H**

Minimum Recommended Truck Specifications H:1
Truck Chassis Requirements H:2
Truck layout, mounting to step #5 ..... H:3
Pump Mounting Bracket H:4
Truck Frame cutoff H:5
Mounting to step #10 ..... H:6
Mounting Lower Lift cylinder bracket charts H:7
PTO and Pump Mounting steps to #17 ..... H:9
PTO and Pump mounting chart H:10
Hoist Start Up H:11
Bumper and Light chart H:13
Hoist Prop Mounting chart H:14
Front Mounting Clamp chart H:15
Sub Frame Plumbing H:16
Fender Mounting (See Parts Section)
Recessed Bumper Electrical Wiring Chart H:17
Hoist Up Warning Signal H:18
ICC Bumper chart H:19
Decal Locations see Decal Chart in Parts Section
Hoist Conspicuity H:20
Pintle Hook Mounting (Also See Pintle Hook Parts Section) H:22

Note: Additional mounting information may be found in the parts section of this manual for individual components and optional equipment.

PARTS **SECTION P**

Hydraulic Schematics P:1
Typical Hydraulic System P:8
Oil Reservoir P:10
Hydraulic Valve P:15
Wet Kit P:19
Hydraulic Pumps P:20
Pump Mounting Brackets P:24
Hydraulic Cylinders P:32
Rod Protector P:37
Inside Controls P:38
Rod Controls Linkage P:43
Inside Controls Cable & Brackets P:44
Bumpers P:48

PARTS (Continued) **SECTION P**

Fenders P:54
Cable Replacement P:67
Cable Layout Chart P:68
Cable Ends P:69
Replacement Cable End Installation Instructions P:70
Fold Down Stops P:72
Tool Box, Tarp Box & Mounting Bases P:77
Hoist Up Warning Signals & Back Up Alarm P:78
Rear Window Screens P:79
Decals & Nameplates P:81
Pintle Hook Split Bumper (Also See Pintle Hook Mounting) P:84
Electric Schematic for Safety/Visibility Package Option P:86

HOIST MODEL INSERT:

Main Frame Parts List
Sub Frame Parts List Tail Assembly Parts List
Tail Assembly Parts List

OPTIONAL EQUIPMENT INSERTS

Enclosed in the packet with this manual are the inserts for optional equipment purchased with this hoist such as lift axle, tarpers and PTO information.

INTRODUCTION

This manual contains composite drawings, necessary instructions, charts, and parts lists for the Tandem Truck Roll-Off Hoist and its options.

It is required that the operators and all involved personnel read this manual and become thoroughly familiar with its contents, especially its sections regarding the operating procedures for this machine.

OPERATOR INSTRUCTION CERTIFICATION & RECEIPT
(Form No. 92025)

Enclosed with this manual is the above mentioned certificate and receipt. The purpose of this certificate is to ensure that the owner and/or operator of Galbreath equipment receives the manual and is instructed in the proper usage of the equipment.

Note:
This form, 92025, must be completed, signed, and returned to Galbreath Incorporated to be placed in our files otherwise NO claim for warranty will be considered for this equipment.

Galbreath, Inc.
P.O. Box 220
461 E. Rosser Drive
Winamac, IN 46996
800-285-0666
574-946-6631

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CUSTOMER SERVICE – WARRANTY – TECHNICAL SUPPORT

We believe the Galbreath support staff to be the most efficient in the industry. We will provide prompt processing of service, repair and warranty assistance.

Should you have any questions or problems with your Galbreath hoist you can contact your local dealer, or your Galbreath Customer Service Representative. Phone numbers are on the front cover of this manual.

If you have a problem with your Galbreath hoist the following information will be required and requested by the Galbreath Customer Service Department at Winamac Indiana

Your Company Name
Address
City, State, Zip
Phone Number and Fax Number (Include Area Code)
Contact Name for Service Representative To Call
Equipment Model
Equipment Serial Number
Brief description of the problem

The hoist serial number may be found on the Galbreath nameplate next to the main control valve or on the driver's side front of the tipping frame. The serial number is also welded on the inside driver's side front of the tipping frame.

If service is required within the warranty period, authorization from the Galbreath Customer Service Department must be obtained before ANY warranty repairs may be performed.

After gathering the above required information, call 1-800-285-0666 and follow the phone directions to access the customer service/warranty department. The customer service representative will handle your call and advise you as to how your situation will be handled.

Sales and application issues please call your local dealer and or your closest Galbreath facility.

Galbreath Customer Service
Phone 1-800-285-0666
Fax 1-574-946-4269
E-Mail rfox@galbreath-inc.com
Web Site: www.galbreath-inc.com

Galbreath ALL STAR Parts
Phone 1-800-946-9476
Fax 1-574-946-4257
E-Mail jroth@galbreath-inc.com
Web Site: www.galbreath-inc.com

GALBREATH INCORPORATED

TANDEM TRUCK ROLL-OFF HOIST
LIMITED WARRANTY & LIMITED LIFETIME FRAME WARRANTY

GALBREATH INCORPORATED ("GALBREATH") warrants it's roll-off hoist main frame weldment against failure, as the result of corrosion, for the life of the hoist frame while it's mounted to the original chassis. (IS4063)

GALBREATH warrants the reservoir, pump, hydraulic control valve, and hydraulic cylinders against operational failure caused by defective material or workmanship, **which occurs during normal use within two (2) years from date of shipment from our factory**.

GALBREATH warrants all other products of it's manufacture against operational failure caused by defective material or workmanship, **which occurs during normal use within one year from date of shipment from our factory.**

GALBREATH will replace all parts of our manufacture free of charge that our inspection at our factory shows to us to be defective in accordance with the above paragraph**. Written permission must be obtained from authorized Galbreath personnel for any repairs performed other than in our factory.** All claims for reimbursement must be filed with proper documentation no later than forty-five (45) days after occurrence to be allowed.

All products purchased by GALBREATH from an outside vendor shall be covered by the warranty of that respective vendor only, and GALBREATH does not participate in or obligate itself to any such warranty.

No freight, travel cost, meals, lodging, or loss of hydraulic oil shall be covered by this warranty, all labor costs allowed shall be in accordance with GALBREATH'S established rate; in case of alleged defect, product shall be returned to GALBREATH with transportation charges prepaid. No freight collect shipment will be accepted.

GALBREATH makes no warranty on any of it's equipment used in any way except as it was designed, intended, and sold to perform.

DISCLAIMER OF WARRANTIES. THE LIMITED AND CONDITIONAL WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ANY AND ALL REPRESENTATIONS, SPECIFICATIONS, WARRANTIES AND REMEDIES, EITHER EXPRESS OR IMPLIED, HEREIN OR ELSEWHERE, OR WHICH MIGHT ARISE UNDER LAW OR EQUITY, OR PURSUANT TO ANY COURSE OF DEALING OR CUSTOM OR USAGE OF TRADE, INCLUDING WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR ANY SPECIFIED OR INTENDED PURPOSE.

LIMITATION OF REMEDIES AND LIABILITY. PURCHASER'S SOLE AND EXCLUSIVE REMEDY AGAINST GALBREATH SHALL BE THE REMEDY OF DEFECTS IN PRODUCTS DELIVERED HEREUNDER AS PROVIDED BY, AND WITHIN THE TIME PERIOD SPECIFIED IN, GALBREATH'S LIMITED WARRANTY SET FORTH ABOVE. GALBREATH'S LIMITED WARRANTY CONSTITUTES THE SOLE REMEDY WITH RESPECT TO OR ARISING OUT OF THE EQUIPMENT, PRODUCTS OR SERVICES OF GALBREATH. NOTWITHSTANDING ANY OTHER PROVISIONS HEREOF, IN NO EVENT SHALL GALBREATH BE LIABLE IN CONTRACT, TORT OR EQUITY FOR ANY LOSS OF ANTICIPATED PROFITS, LOST SALES, INJURY TO PERSONS OR PROPERTY, LOSS BY REASON OF PLANT SHUTDOWN, NON-OPERATION OR INCREASED EXPENSE OF OPERATION, SERVICE INTERRUPTIONS, CLAIMS OF CUSTOMERS, COST OF MONEY, LOSS OF USE OF CAPITAL OR REVENUE, OR FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL LOSSES OR DAMAGES OF ANY KIND WHATSOEVER.

All claims shall be processed through the GALBREATH Customer Service Department or your authorized GALBREATH dealer.

GALBREATH INCORPORATED
Revised 2/24/00

OPERATION SECTION (O)

OWNER/EMPLOYER RESPONSIBILITY

The employer shall properly maintain mobile equipment to meet all applicable regulatory safety standards and shall be responsible for the following operational requirements:

1. Providing for instruction and training in safe methods of work to employees before assigning them to operate, clean, service, maintain or repair the equipment. This instruction shall include all procedures contained in these instructions. The employer shall maintain records of the names of employees trained and the date of training.

2. Monitoring the employee's operation of equipment and taking appropriate action to ensure proper use of this equipment, including adherence to safe practices.

3. Establishing and following a program of periodic and regular inspections of all equipment to ensure that all parts, component equipment, and safeguards are in safe operating condition and adjusted in accordance with the manufacturer's recommendations. This shall include keeping all malfunction reports, records of inspections, and maintenance work performed.

4. Repairing, prior to allowing the equipment to be placed into service, any mechanical malfunction or breakdown that affects the safe operation of the equipment. (Example: cracks, lights, hoses, latches, hitches, holddowns, etc.)

5. Meeting the appropriate lighting requirements before attempting to operate the equipment during hours of darkness. **NOTE: The manufacturer is not required to install extra lighting on the equipment.**

6. Ensuring this equipment will not be used to lift, haul or move weight that is believed to exceed the load rating capacity in any way of the individual components or the entire piece of equipment. (Example: hoist, tires, truck chassis, suspension, etc.)

7. Ensuring the hoist is adequately supported when the hoist is raised for service or maintenance.

8. Utilizing a lockout procedure when cleaning, servicing, maintaining, or repairing this equipment (See Lockout Procedure).

9. On equipment that carries detachable containers, the employer shall affix a sign or mark on the container near the cab on the driver's side stating the minimum overhead clearance required for the vehicle and container to pass under when positioned for normal over-the-road travel.

10. Specifically inspecting safety equipment and protective devices to ensure they are not disabled or bypassed. **NOTE: Do not permit operation of equipment with devices that are not fully functional**.

OPERATOR/EMPLOYEE RESPONSIBILITY

Operators/employees who work on or operate mobile equipment shall be responsible for:

1. Using all applicable safety features provided on the equipment.

2. Using equipment only after being properly instructed and trained in accordance with Owner/Employer Responsibility items (1) and (2).

3. Reporting any damage to, or malfunction of, the equipment by submitting a report to the employer or responsible authority either when the damage occurs or as soon thereafter as is practical. (The employer should also document such reports.)

4. Ensuring the work area is clear of all persons during all phases of the operation prior to operating the equipment.

5. Ensuring the work area has sufficient clearance on sides and overhead (Ex: roof or ceiling, side walls, power lines, etc.) for the hoist, truck, and container throughout all phases of operation.

6. Ensuring that all persons are clear of tailgate and container contents that may fall out before the tailgate is opened. The operator shall warn all persons not to cross under a raised container or an open tailgate.

7. Operating all equipment in accordance with the manufacturer's instructions.

8. Riding only in the cab and not on any other part of the mobile equipment.

9. Never bypass or remove safety devices which have been installed on the equipment. Never operate the equipment unless these devices are fully functional.

10. Container hold downs must be used.

11. Do not operate the equipment if your work ability is impaired by fatigue, illness, or other causes.

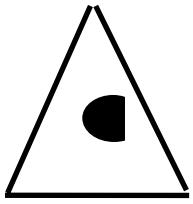
12. Never operate equipment that is in need of repair regardless of how slight the repair appears to be.

13. The only allowable place to ride on the equipment when the trailer unit is in motion is in the cab of the tractor.

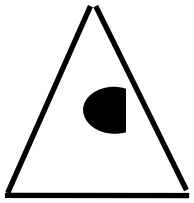
14. When coupling a container back to a compactor, follow the specifications of the compactor manufacturer.

15. **BE ALERT TO ALL POSSIBLE HAZARDOUS SITUATIONS AND CONDITIONS.**

Please note that the Owner/Employer and Operator/Employee responsibilities listed are only a guideline, they are not exhaustive. There are other responsibilities, as dictated by the uniqueness of each installation, for which the Owner/Employer and Operator/Employee is responsible.



DANGER



THIS HOIST MUST ONLY BE USED WITH A CONTAINER THAT HAS SPECIFICATIONS THAT MATCH THE HOIST SPECIFICATIONS. (i.e. PROPER STYLE HOOKUP, SPACING BETWEEN LONG SILLS, ETC...) NON-COMPLIANCE COULD RESULT IN DAMAGE TO THE EQUIPMENT AND/OR INJURY TO PERSONS.

LOCKOUT PROCEDURE GUIDELINE

(Required By Safety Standards)

The purpose of a Lockout Procedure is to recognize, isolate, and render safe all types of energy sources. The Lockout Procedure should establish performance habits which provide for the protection from injury for any personnel in, on, or around the equipment during repair, maintenance, and other associated activities.

Compliance and enforcement of a Lockout Procedure is the responsibility of the Owner/Employer and Operator/Employee. The following information is a guide line to achieve a Lockout Procedure. A detailed documented program must be established to fit each situation and condition.

1) Observe and review all the conditions of the equipment. All sources of stored energy must be recognized, managed, and cautiously released by qualified personnel. Examples:

   - ❖ Shutting down truck engines and any auxiliary engines.
   - ❖ Disengage power take-off systems.
   - ❖ Relieving stored hydraulic or pneumatic pressure after installing any blocking devices.
   - ❖ Relieving all entrapped hydraulic pressure.

2) Remove the key from the vehicle ignition.

3) All individuals affected must be notified and comply with the Lockout Procedure.

4) Tag all controls to inform personnel that the equipment is “under repair”, “do not operate”, or whatever the situation dictates. All affected personnel must be previously informed as to the meaning and appearance of the Lockout Tag.

   Minimum Requirements For Lockout Tag:

   - ❖ Tags must be made out of a material capable of withstanding the environment to which they are exposed (Example: oil, grease, fuel, etc.).
   - ❖ Tags must be easily recognizable and clearly visible at the location of the operating controls.
   - ❖ Tags used must be standardized with one or more of the following criteria: color, shape, size, and/or format.

5) Only authorized individuals should release the equipment for use after repairs have been made.

6) Periodic inspections should be done by the employer to verify the correct use and compliance with the Lockout Procedure.

! DANGER !

FAILURE TO COMPLY WITH THE LOCKOUT PROCEDURE MAY RESULT IN INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT.

NOTE: There are other procedures and responsibilities associated with the Lockout Procedure as dictated by the uniqueness of each situation and any applicable standards and/or codes.

Please note that the procedure basics listed above are to create an awareness of the necessity for a "Lockout/Tagout Procedure". The owner/employer should obtain a current copy of the following references:

ANSI Z244.1
Federal Code Of Regulations Title 29 Part 1910 Section 1910.147

The Federal Code Of Regulations may be accessed via the internet at the National Archives and Records Administration website at
http://www.access.gpo.gov/nara/cfr/

It is ultimately the owner's/employer's responsibility to establish, train for, and oversee the implementation of the lockout/tagout procedures.

OPERATING PRECAUTIONS

The following precautions should always be observed:

Do Not use chain to hook onto any container, as the hoist has the power to break most chains.

Never adjust the hydraulic pressure setting without the use of an accurate working pressure gauge placed in the system on the pressure side of the main hydraulic control valve. **NOTE: Do not set the pressure to exceed pressures shown on hydraulic schematic.**

Operate one control handle at a time. The control valve is not designed to operate two or more functions simultaneously.

Do not alter the hydraulic valves or the hydraulic system in any way without prior approval in writing from the factory.

Never use a locking device to hold a control handle or a valve open, as the valves are designed to return to the center when released, allowing a complete stop of movement.

Check the cable for excessive wear and replace as needed. (Cable manufacture recommends changing cable once a year and factor concurs.) **NOTE: It is necessary to change the four cable clamps when replacing the cable.**

Observe and *obey* all caution and warning decals on both hoist and containers.

Always power the hoist down. Do not let its weight push it down with the PTO disengaged. This may cause air infiltration into the hydraulic system. Damage to the pump by cavitations may occur.

Never drive the truck with the P.T.O. engaged.

Never drive the truck with the hoist in other than full down position.

Hydraulic oil warm up is required in very cold weather. Engage P.T.O. and let truck idle for several minutes.

Never allow anyone to work on the hoist in the raised position, without adequate support to prevent the hoist from lowering.

Never move the truck unless the container and hoist rear hold downs are engaged.

Never move a truck with the container loaded unless the hoist is down in the over the road travel position. If the unit is equipped with a rear stabilizer, it must be raised up off the ground before moving the truck.

Always drive slowly over rough and bumpy roads to prevent excessive stress on the equipment. Operate the equipment smoothly and slowly.

Your roll-off trailer hoist has been designed to give extended service when used with good working habits. Always operate your roll-off within its rated capacity and follow the suggested maintenance and lubrication program. **RESPECT YOURSELF AND OTHERS AND THIS EQUIPMENT. USE GOOD WORKING HABITS AND COMMON SENSE WHEN OPERATING THE HOIST.**

Maximum Container Weight per Hoist Model & Hoist Rated Capacity

Hoist Model	Maximum Container Weight & Hoist Rated Capacity (LBS)	Maximum Container Weight & Hoist Rated Capacity (KG)
U2-EX-119	20,000	9,072
U2-EX-138	25,000	11,340
U2-OR-138	25,000	11,340
U3-EX-156	30,000	13,608
U3-HH-138	30,000	13,608
U3-IO-156	30,000	13,608
U3-MM-138	30,000	13,608
U3-OR-156	30,000	13,608
U4-DL-156	40,000	18,144
U4-DL-174	40,000	18,144
U4-EH-156	40,000	18,144
U4-EH-174	40,000	18,144
U4-EX-156	50,000	22,680
U4-EX-174	50,000	22,680
U4-HH-156	40,000	18,144
U4-HH-174	40,000	18,144
U4-IH-156	40,000	18,144
U4-IO-156	50,000	22,680
U4-IO-174	50,000	22,680
U4-MM-156	40,000	18,144
U4-OR-156	50,000	22,680
U4-OR-174	50,000	22,680
U5-DL-156	50,000	22,680
U5-DL-174	50,000	22,680
U5-DL-194	50,000	22,680
U5-EH-156	50,000	22,680
U5-EH-174	50,000	22,680
U5-EH-194	50,000	22,680
U5-EX-156	60,000	27,216
U5-EX-174	60,000	27,216
U5-EX-194	60,000	27,216
U5-HH-156	50,000	22,680

Maximum Container Weight per Hoist Model & Hoist Rated Capacity

Hoist Model	Maximum Container Weight & Hoist Rated Capacity (LBS)	Maximum Container Weight & Hoist Rated Capacity (KG)
U5-HH-174	50,000	22,680
U5-HH-194	50,000	22,680
U5-IH-156	50,000	22,680
U5-IO-156	60,000	27,216
U5-IO-174	60,000	27,216
U5-IO-182	60,000	27,216
U5-IO-194	60,000	27,216
U5-IOH-156	50,000	22,680
U5-IX-174	60,000	27,216
U5-IX-194	60,000	27,216
U5-MM-156	50,000	22,680
U5-MM-174	50,000	22,680
U5-OR/HH-174	60,000	27,216
U5-OR/HH-194	60,000	27,216
U5-OR-156	60,000	27,216
U5-OR-174	60,000	27,216
U5-OR-194	60,000	27,216
U5-SI-186	60,000	27,216
U5-SI-194	60,000	27,216
U5-TX-174 34.5 W/ROLLER	50,000	22,680
U5-TX-174 34.5 WO/ROLLER	50,000	22,680
U5-TX-174 35.5 W/ROLLER	50,000	22,680
U5-TX-174 35.5 WO/ROLLER	50,000	22,680
U6-IRCOR-174	60,000	27,216
U75-IO-174	75,000	34,019
U75-IO-194	75,000	34,019
U75-OR-174	75,000	34,019
U75-OR-194	75,000	34,019
UH-IO-174	75,000	34,019

Maximum Container Weight per Hoist Model & Hoist Rated Capacity

Hoist Model	Maximum Container Weight & Hoist Rated Capacity (LBS)	Maximum Container Weight & Hoist Rated Capacity (KG)
UH-IO-194	75,000	34,019
UH-OR-174	75,000	34,019
UH-OR-194	75,000	34,019
UM-EX-194	60,000	27,216
UM-HH-194	50,000	22,680
UM-IO-194	60,000	27,216
UM-OR-194	60,000	27,216
UT-DL-174	50,000	22,680
UT-DL-194	50,000	22,680
UT-EH-174	50,000	22,680
UT-EH-194	50,000	22,680
UT-EX-174	60,000	27,216
UT-EX-194	60,000	27,216
UT-HH-174	50,000	22,680
UT-HH-194	50,000	22,680
UT-IO-174	60,000	27,216
UT-IO-182	60,000	27,216
UT-IO-194	60,000	27,216
UT-IX-174	60,000	27,216
UT-IX-194	60,000	27,216
UT-OR/HH-174	60,000	27,216
UT-OR/HH-194	60,000	27,216
UT-OR-174	60,000	27,216
UT-OR-194	60,000	27,216
UT-SI-186	60,000	27,216
UT-SI-194	60,000	27,216
UT-TX-174 34.5 W/ROLLER	50,000	22,680
UT-TX-174 34.5 WO/ROLLER	50,000	22,680
UT-TX-174 35.5 W/ROLLER	50,000	22,680
UT-TX-174 35.5 WO/ROLLER	50,000	22,680
UX-OR-178	60,000	27,216

RECOMMENDED LOADING PROCEDURE
TAIL TO GROUND HOISTS

The following information is a guideline for operating a tail to ground roll-off-hoist. These instructions do not exhaust every possible situation that could occur when operating the equipment, but are intended to promote efficient and proper operation.

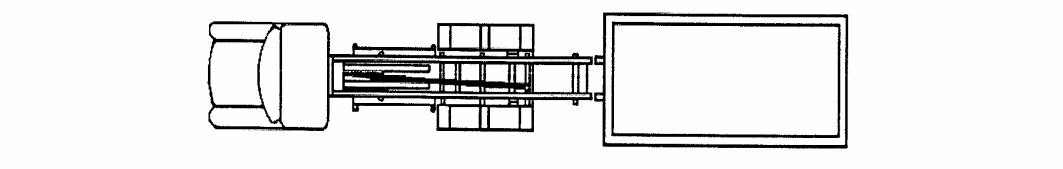
! WARNING !
BEFORE OPERATING THE EQUIPMENT:

1. Be sure the area is clear of people.
2. Check the area for low power lines or any other obstacle which may interfere with hoist operation.
3. Never operate equipment which is damaged and/or improperly maintained. **NOTE: The Smallest Crack Must Be Repaired**.
4. Always operate the equipment within its rated capacity.
5. Study this entire manual and become properly trained with this equipment before attempting to operate this equipment.
6. Respect yourself, others, and this equipment. Use safe working habits and common sense when operating this equipment.

NOTE
Failure to follow the items listed above may result in damage to equipment and/or to persons.

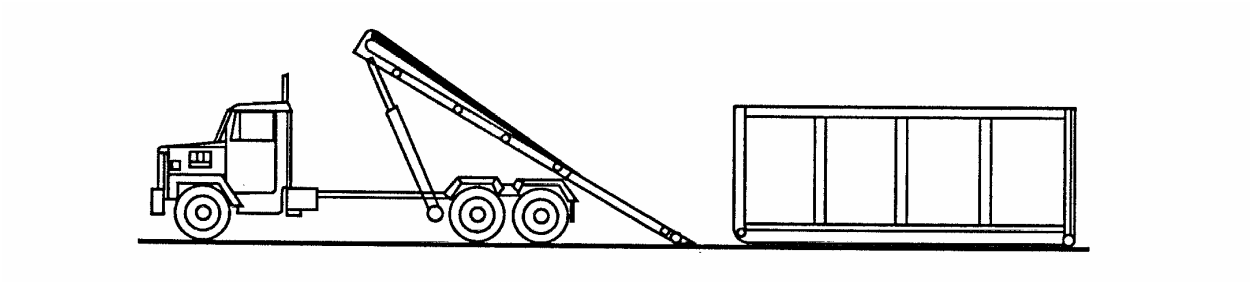
LOADING A CONTAINER

1. Illustration 1



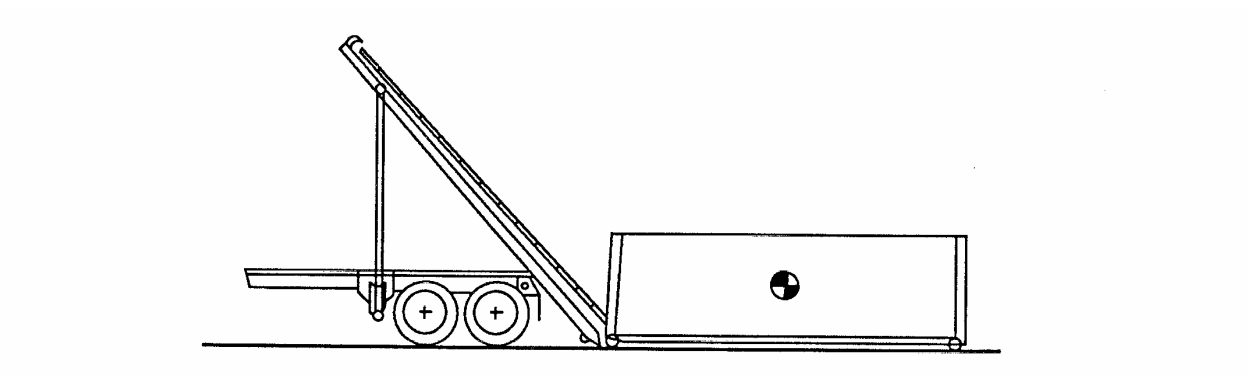
Aligning the hoist rails with the long sills on the container, back the truck squarely as possible to the container. Allow 3 - 4 feet between the container and hoist (allow 8 - 9 feet for extendable tail models). Put the transmission in neutral and engage the P.T.O. Extend the tail on extendable tail models.

2. Illustration 2



Raise the hoist until the tail touches the ground. (**NOTE**: Do not allow the hoist tail to lift the truck up by raising the hoist after the tail is touching the ground.)

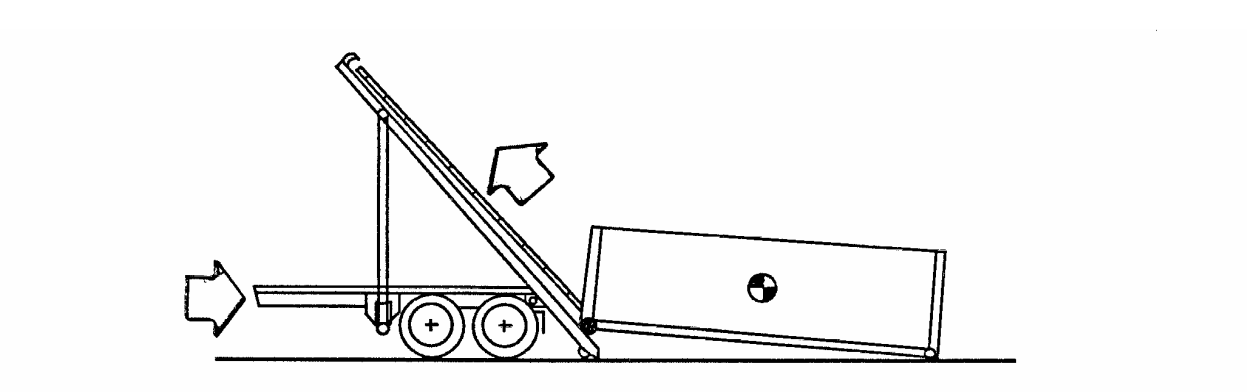
3. Illustration 3



Set truck brakes. Retract the winch cylinder and connect the cable to the container hook.

! ! DANGER ! !
Check to be sure the cable connection is securely attached and in good working condition.

4. Illustration 4



Release truck brakes. Pull the container onto the hoist allowing the truck to roll under the container.

! ! CAUTION ! !
Be absolutely sure the container long sills are lined up on the hoist properly.

5. Illustration 5

NOTE: Container front roller ahead of hoist rear hinge point.

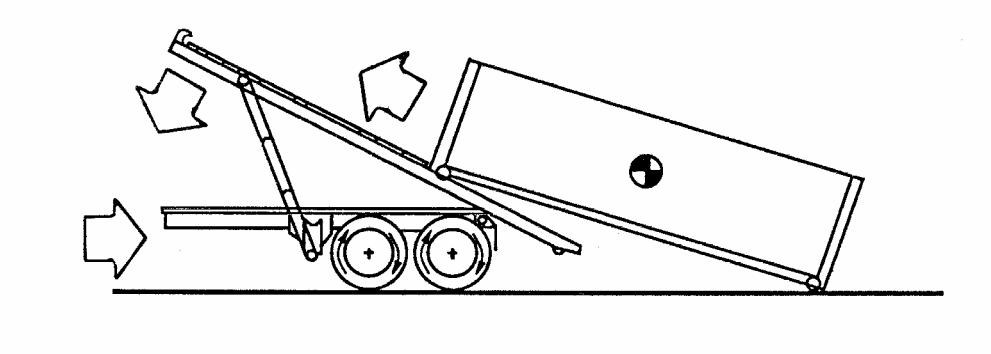
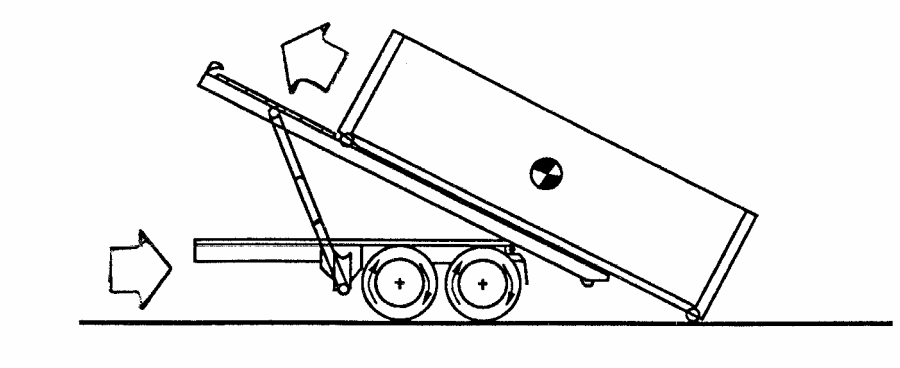


Illustration 6

NOTE: Container long sills and hoist rails in line with each other.



Continue pulling the container onto the hoist. After the container front rollers are ahead of the hoist rear hinge point, lower the hoist enough to keep the container long sills and hoist rails in line and even with each other.

6. Illustration 7

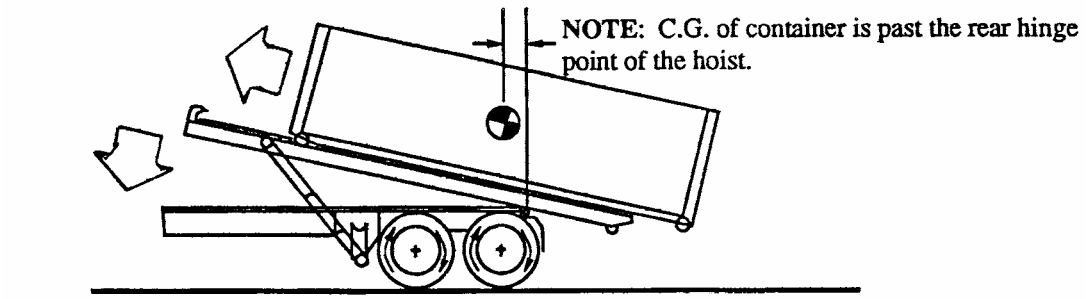
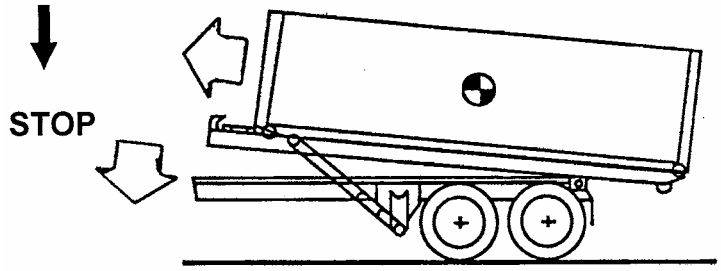


Illustration 8

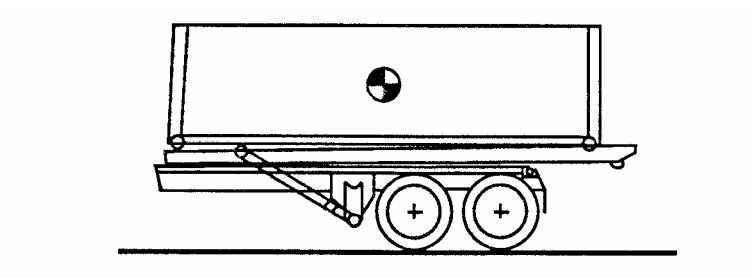


Lower the hoist when the center of gravity of the container is forward of the rear hinge and continue pulling the container forward until it is securely locked into the front stops.

! ! CAUTION ! !

Do not attempt to power the hoist down before the C.G. of the container is past the rear hinge point of the hoist. This can cause excessive stress, loss of control and/or damage to equipment.

7. Illustration 9



In addition to the front stops, container and hoist should always have a rear container hold-down device. Disengage P.T.O. before driving away.

! ! DANGER ! !

The container and hoist must be equipped with the proper front stops and rear holddowns. The container specifications must match the hoist specifications. (Ex: Roller size & location, proper style hook up, spacing between long sills, etc.) The container and hoist must be in good working order. Non-compliance could result in damage to equipment and/or injury to persons and is the operator/owner's responsibility.

RECOMMENDED LOADING PROCEDURE
DEADLIFT HOISTS

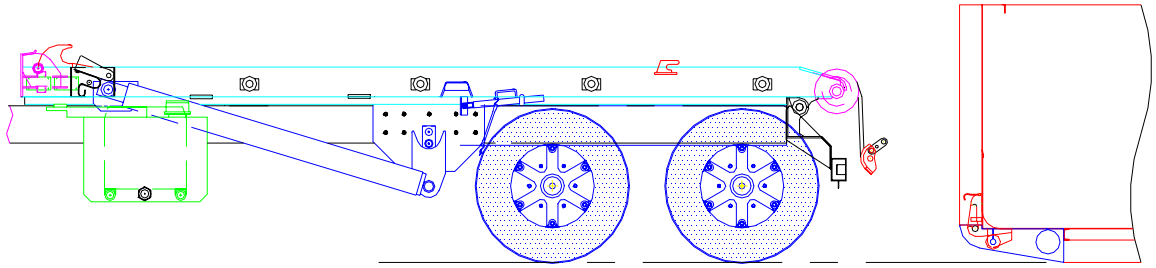
The following information is a guideline for operating a deadlift roll-off-hoist. These instructions do not exhaust every possible situation that could occur when operating the equipment, but are intended to promote efficient and proper operation.

! WARNING !
BEFORE OPERATING THE EQUIPMENT:

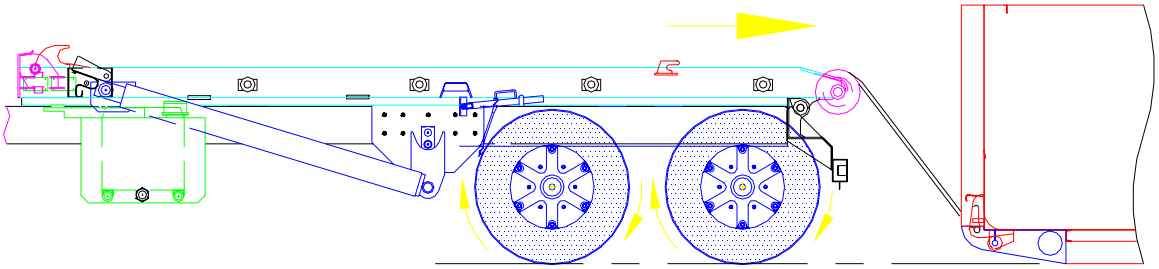
1. Be sure the area is clear of people.
2. Check the area for low power lines or any other obstacle which may interfere with hoist operation.
3. Never operate equipment which is damaged and/or improperly maintained. **NOTE: The Smallest Crack Must Be Repaired**.
4. Always operate the equipment within its rated capacity.
5. Study this entire manual and become properly trained with this equipment before attempting to operate this equipment.
6. Respect yourself, others, and this equipment. Use safe working habits and common sense when operating this equipment.

NOTE
Failure to follow the items listed above may result in damage to equipment and/or to persons.

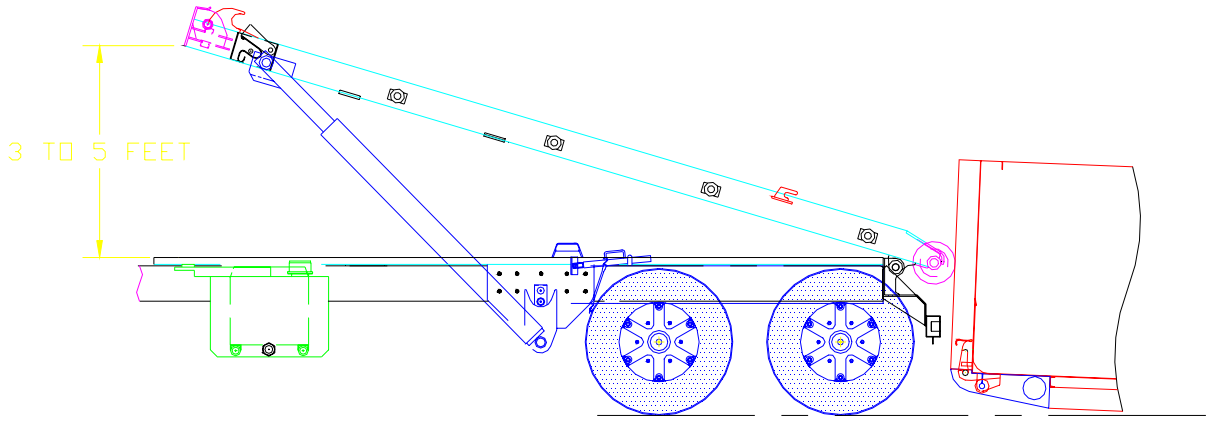
LOADING A CONTAINER
(IS284)



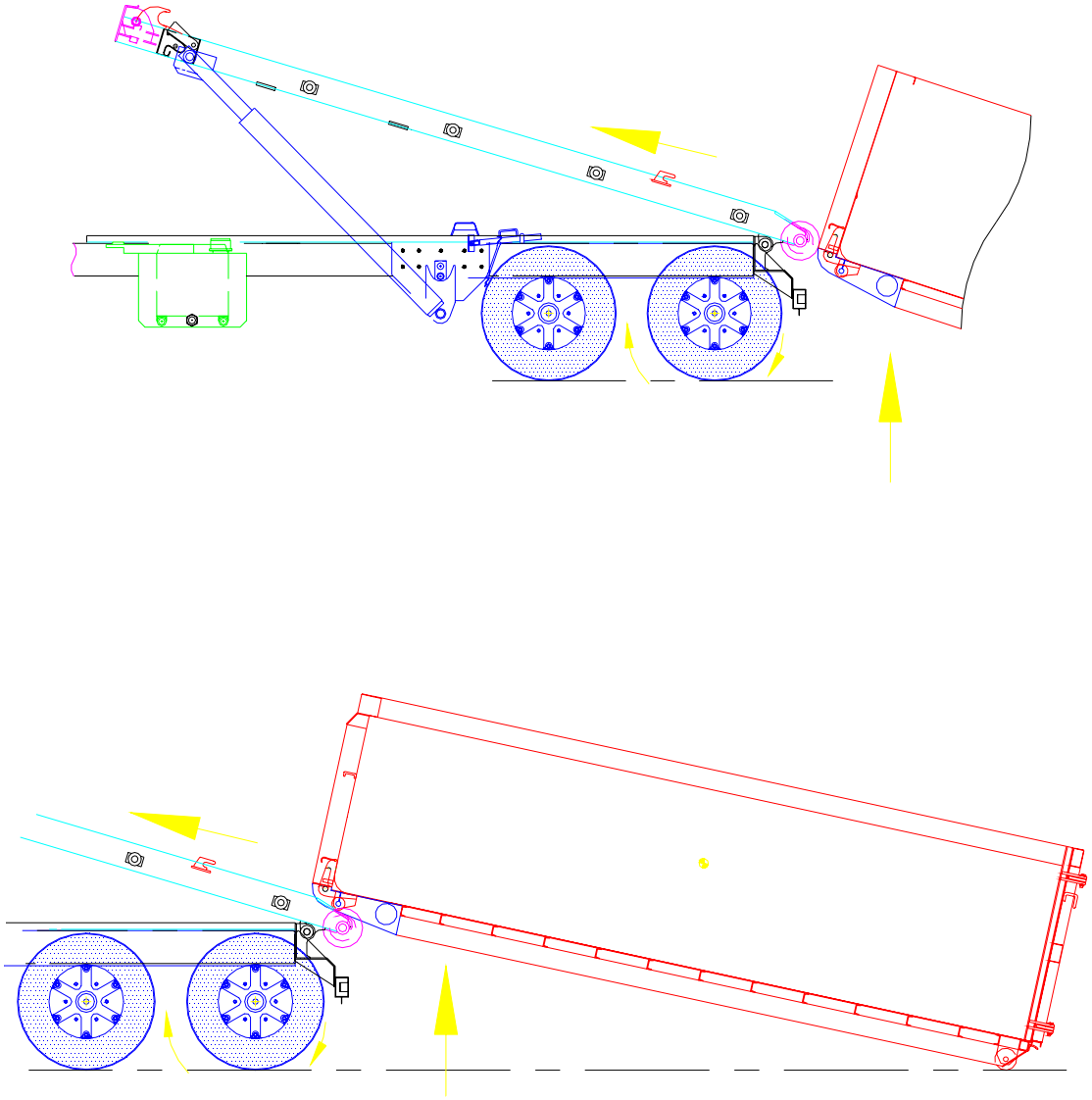
Back hoist squarely up to container 3 to 5 feet away from the container. Lock brakes. Connect cable securely to the container. Put the transmission in neutral and engage the P.T.O.



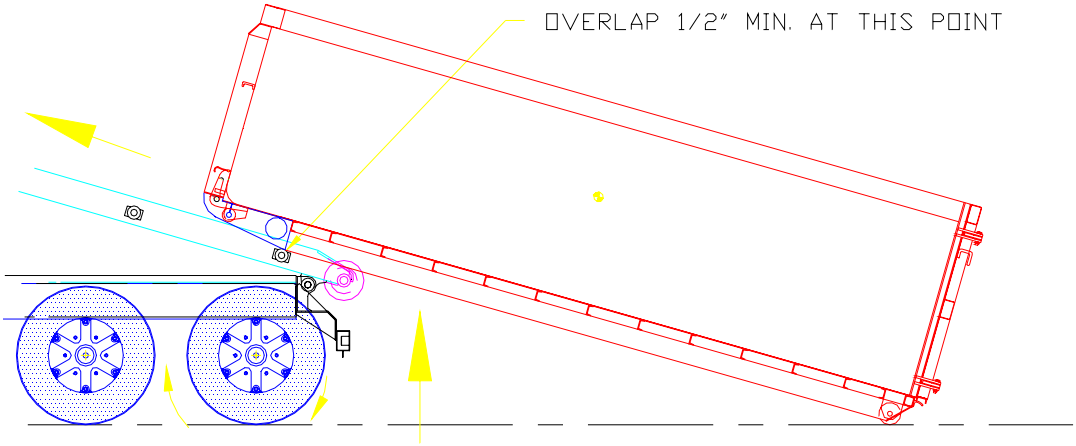
Release brakes to allow the hoist to roll backwards to the container as the cable is tightened.



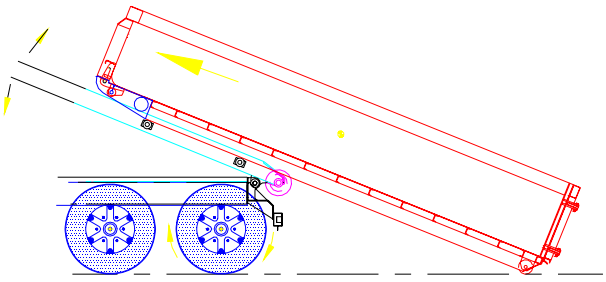
Raise hoist 3 to 5 feet.



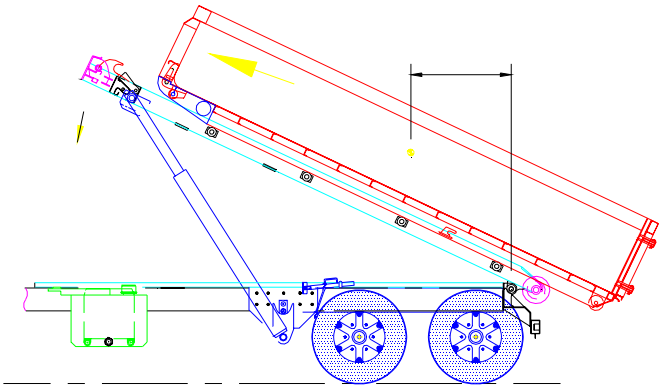
Pull the container up and over the flange roller on the hoist.



Allow the hoist to roll backwards as the container is pulled onto the hoist. Raise or lower the hoist as needed to maintain a 1/2" overlap of the container nose cone and hoist rails.

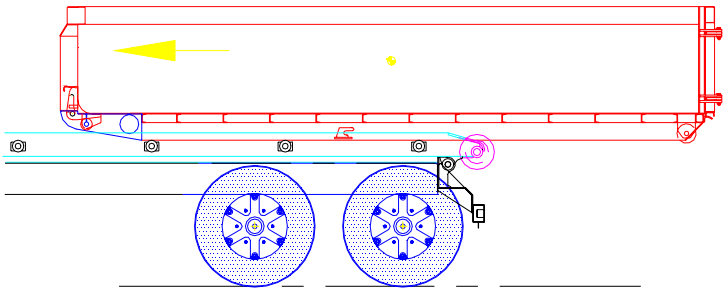


Until the C.G. of the container is past the hoist rear hinge point, raise or lower the hoist as needed to keep the container long sills on the hoist rollers.



When the C.G. of the container is past the rear hinge point of the hoist, set brakes and lower the hoist.

! ! WARNING ! !
If the C.G. is not forward of the hoist rear hinge point when lowering the hoist, the lift cylinders could fail to pull the hoist down. To correct this situation, raise the hoist and pull the container forward until the C.G. is past the hoist rear hinge point.



Pull the container forward until it is securely locked into the front stops. In addition to the front stops, container and hoist should always have a rear container hold-down device. Disengage P.T.O. before driving away.

! ! DANGER ! !

The container and hoist must be equipped with the proper front stops and rear holddowns. The container specifications must match the hoist specifications. (Ex: Roller size & location, proper style hook up, spacing between long sills, etc.) The container and hoist must be in good working order. Non-compliance could result in damage to equipment and/or injury to persons and is the operator/owner's responsibility.

DUMPING A CONTAINER

! CAUTION ! Before raising the hoist, observe both sides and rear of the hoist for personnel. DO NOT RAISE THE HOIST IF ANYONE IS CLOSE ENOUGH TO BE HIT SHOULD THE HOIST TIP OVER. Also, observe for any personnel that may be heading into the area during the dumping operation.

Review all of the following items as a guideline to perform the dumping operation. These items do not exhaust every situation which may occur, but are intended to promote proper operation when combined with safe work habits and common sense.

1) Dump site - The area should be level, solid, and clear of obstacles. Check for overhead clearances such as power lines.

2) Dumping Loads - In the down position, open the tailgate and secure the door in the open position using the chain provided on the container door. Engage P.T.O. and raise hoist until load slides out.

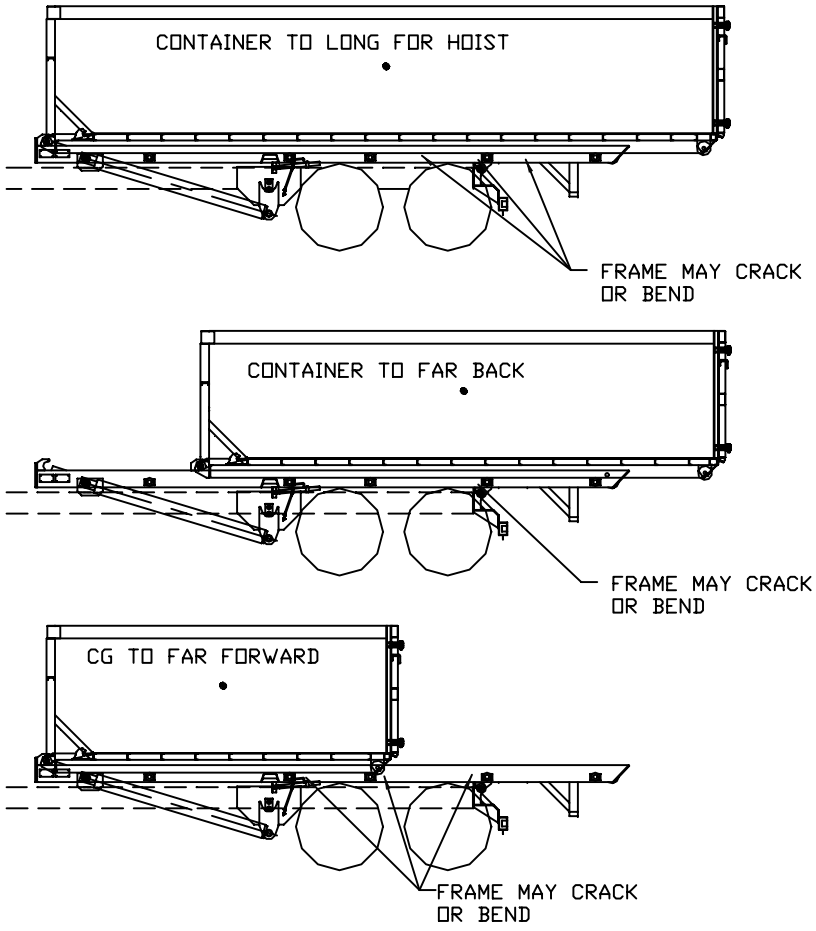
CAUTION: In the event that all of the load is not discharged or it becomes necessary to move the unit forward, the hoist and container must be lowered to the full down or travel position prior to any forward movement of the truck. Always keep the tires properly and evenly inflated.

UNLOADING A CONTAINER

1) Set truck brakes.
2) Raise the hoist high enough to allow the container to move rearward.
3) Lower the container.
4) Release the truck brakes. Continue lowering the container allowing the truck to roll out from under the container.

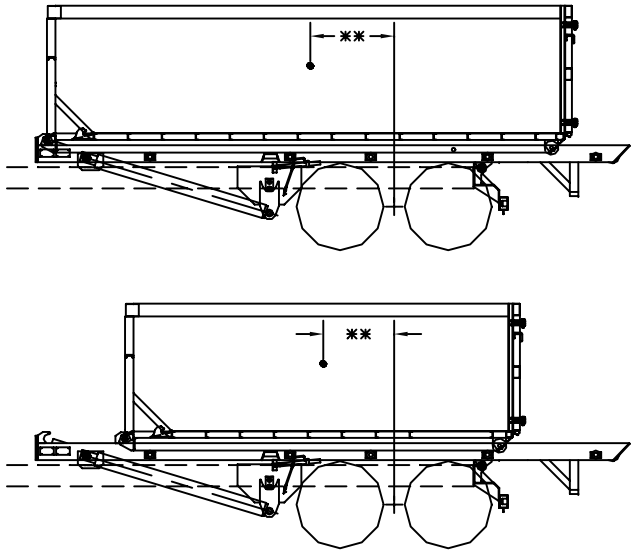
! CAUTION ! If the container being unloaded is heavy, feather the control valve to slow the downward movement of the container. Do not allow the front of the container to hit the ground abruptly. Failure to do so can result in damage to the container.

INCORRECT CONTAINER POSITIONING


CONTAINER TO LONG FOR HOIST
FRAME MAY CRACK OR BEND
CONTAINER TO FAR BACK
FRAME MAY CRACK OR BEND
CG TO FAR FORWARD
FRAME MAY CRACK OR BEND

CORRECT CONTAINER POSITIONING

** CG IS APPROXIMATELY 10-12% OF WHEEL BASE IN FRONT OF CENTER POINT OF BOGIE.



NOTE: SCALE EQUIPMENT TO DETERMINE PROPER WEIGHT DISTRIBUTION.

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ECN DATE	NO.	BY			DATE 1/17/90								

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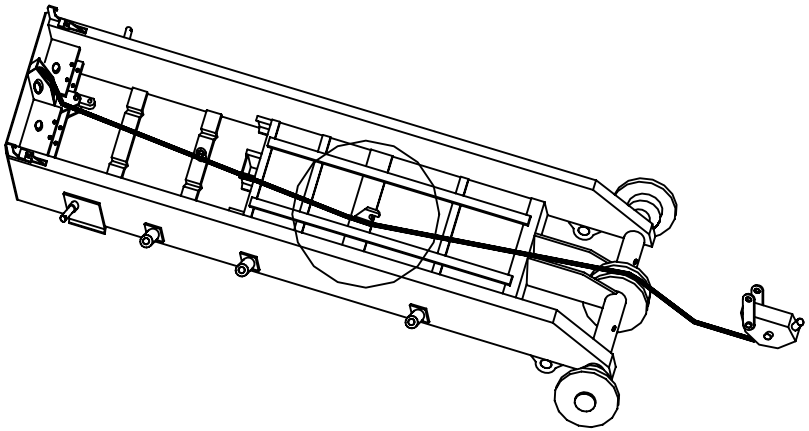
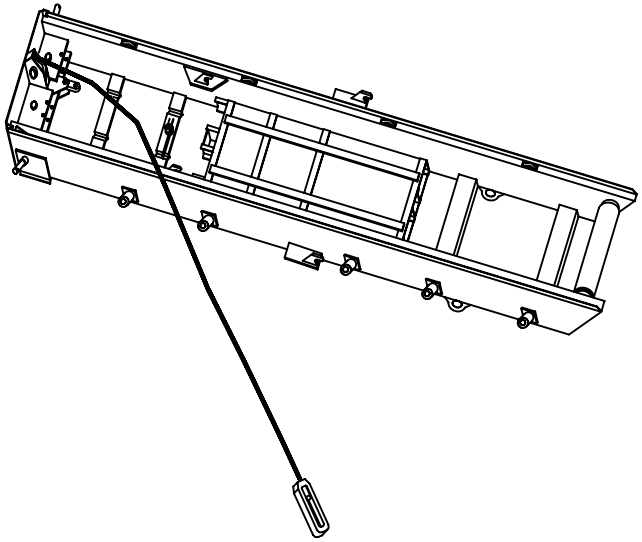
DO NOT OPERATE HOIST WITH
THE CABLE IN THIS POSSITION.





WHEN OPERATING YOUR HOIST, MAKE SURE THAT THE CABLE RUNS STRAIGHT DOWN THE CENTER OF THE HOIST. BE CAREFULL NOT TO HAVE THE CABLE LOOPED ON THE OUTBOARD SIDE OF THE REAR HOLD DOWN AS ILLUSTRATED.

CAUTION: ALWAYS PULL CABLE UP CENTER OF HOIST. NEVER ALLOW CABLE TO BE PULLED OVER SIDE OF HOIST WHEN WINCHING ON, AS THIS CAN CAUSE THE CABLE TO DESTROY ITSELF OR DAMAGE FRONT SHEAVE.

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OPERATION AND MAINTENANCE PRECAUTIONS FOR PINTLE HOOK APPLICATIONS

Before operating the equipment, inspect for worn, damaged, or missing parts. Inspect the entire pintle hook and surrounding area where it is mounted to the truck for cracks, bends, or any damage. Repair and/or replace the equipment before using.

The towing vehicle on which the pintle hook is mounted must be of a sufficient rated capacity for the trailer utilized and in proper working condition.

The truck air system must be equipped with an air-dryer to prevent dirt and moisture from getting into air valves.

The trailer must have retaining cables or chains hooked to a strong enough attachment capable of holding the trailer should a detachment occur.

Never jack-knife the trailer when dumping, loading, unloading and when backing for any reason. Always keep the trailer and truck in a straight line. Jack-knifing the trailer can cause damage to the pintle hook and/or trailer tongue.

Before moving any trailer, all necessary connections, such as the service and emergency air lines and electrical hookup, must be made. **CAUTION**: The air pressure must be allowed to build up in the trailer's air reservoir tank(s) before moving the equipment. The trailer brakes should then be checked to ensure proper working condition.

Always drive the equipment slowly over rough and bumpy roads. Always operate the equipment smoothly and carefully.

! WARNING !

The bouncing of the truck suspension is carried backwards to the pintle hook. The pintle hook then becomes a moving force with the impact of a large hammer upward and downward on the trailer tongue eye causing abuse to equipment. Always drive at greatly reduced speeds over rough terrain to minimize this destructive action.

OPERATION AND MAINTENANCE PRECAUTIONS FOR PINTLE HOOK APPLICATIONS

(Con't)

Never exceed the capacity of the pintle hook and/or any equipment utilized.

! WARNING !

Applying the brakes severely increases the weight transferred to the trailer tongue on trailers without front axles. Therefore, products that can shift, such as sludge, water, etc., must never be transported by this type of trailer.

Follow all maintenance instructions, warnings, and general instructions listed on Holland's specification sheet which is enclosed in this manual.

Be particularly careful not to damage the pintle hook when coupling and uncoupling the trailer.

MAINTENANCE SECTION (M)

INTRODUCTION AND PREVENTIVE MAINTENANCE COMMENTS

Maintenance begins with the purchase and use of the correct hoist properly designed for the hoist application. Trained, qualified and competent personnel should perform all operation, inspections, service and maintenance issues.

Galbreath strongly urges each owner/operator set up a “Preventive Maintenance Program” that will provide adequate inspection, servicing and repair of their hoist and it’s components for the purpose of providing safe operation and maximize the service life of this equipment.

NOTE: The suggested preventative maintenance inspection and time intervals may need to be adjusted due to factors such as: severe or heavy usage, muddy or dusty environment, special application, warranty and maintenance history issues.

QUICK REFERENCE PREVENTIVE MAINTENANCE INTERVAL CHART

These inspections are intended to verify that the hoist and it's components are in the proper safe operation and are within normal wear guidelines. If there are any items that do not pass your inspection, you must notify your supervisor and a lockout tag must be placed on the equipment as outlined in the "Lockout Procedure Guideline" section of this manual.

Daily Inspections

Hydraulic components
Hydraulic and air leaks
Oil level
Structural components and welds
Front and rear stops
Sheave blocks
Rear hinge
Pivot Points
Rollers
Cable and cable ends
Control rod or cable linkage
Nuts & bolts
Shafts & Cotter keys
Lamps
Reflectors
Electrical wiring
Back up & hoist up warning systems

Weekly Inspections

Grease all grease fittings (Ref. Lube Charts for grease fitting locations)

Every Three Months

Inspect the condition of hydraulic oil for proper color, odor and feel

Every Six Months

Replace hydraulic oil filter
Replace air breather

Every Twelve Months

Replace hydraulic oil
Replace air & hydraulic oil filters
Clean suction strainer

NOTE: Reference "Suggested Preventative Maintenance" section below for additional detailed information.

SUGGESTED PREVENTIVE MAINTENANCE

Lubrication

Proper lubrication is essential to all types of bearings, gearing, and friction producing mechanical devices. Lack of adequate and proper lubrication results in premature wear of components due to increased abrasion or excessive heat. Lubricate unit a minimum of once a week. Reference “Lube Charts” in this manual.

Grease

All grease fittings should be properly greased after 40 hours of service or a minimum of once a week for average usage. Reference “Lube Charts” in this manual.

Hydraulic System

Daily inspect for leaks, loose hydraulic lines and fittings, oil level and proper operation of hydraulic system.

Air Breather

Replace air breather every six months. Reference “Lube Charts” in this manual.

Oil Filter

Replace oil filter every six months. Reference “Lube Charts” in this manual.

Suction Strainer

Inspect and clean suction strainer when changing hydraulic oil.

Hydraulic Oil

Every Three Months: Inspect oil for proper color, odor and feel. Replace oil if milky or darkens in color, begins to have an odor, or lacks lubricity to your touch.
Every Twelve Months: Replace oil with ISO32 (AW32) Anti-wear hydraulic oil filtered through the return filter or filter existing oil to ISO Code 18/15 and remove water with water separation media filter (water less than 50 parts per million).
NOTE: When replacing or adding oil, always filter the oil through the return filter.

Hydraulic Cylinders

Inspect cylinder rods, fittings and operation. Apply grease to the grease fitting on the hydraulic cylinder every week.

SUGGESTED PREVENTIVE MAINTENANCE (Continued)

MECHANICAL

Structural & Weld Integrity

Check to insure proper and safe working condition of structural members. Make sure it is within normal wear guidelines. Inspect weld joints.

Front & Rear Stops

Check to insure proper and safe working condition of stops.

Nuts, Bolts, Shafts, Cotter Keys, Etc.

Check to insure proper and safe working condition. Make sure it is within normal wear and proper torque guidelines.

Control Rod or Cable Linkage

Check to insure proper and safe working condition. Inspect connections and apply proper lubrication on pivot and wear areas.

Rollers, Sheave Blocks, Rear Hinge, Pivot Points

Check to insure proper lubrication, adjustment and operating functions.

Container Hold Down Devices

Check to insure proper and safe working condition.

Hoist Cable

Daily inspect the cable along with a through inspection every 40 hours for breakage, unraveling or flat spots as well as cable ends, clamps and pins. The cable should be lubricated frequently to prevent rusting.

ELECTRICAL SYSTEM

Reflectors/Lights

Daily inspect all lamps and reflectors. Make sure they are cleaned and in proper working order.

Electrical Wiring

Inspect all visible wiring to see that it is not frayed and is properly supported and protected and that all connections are tight.

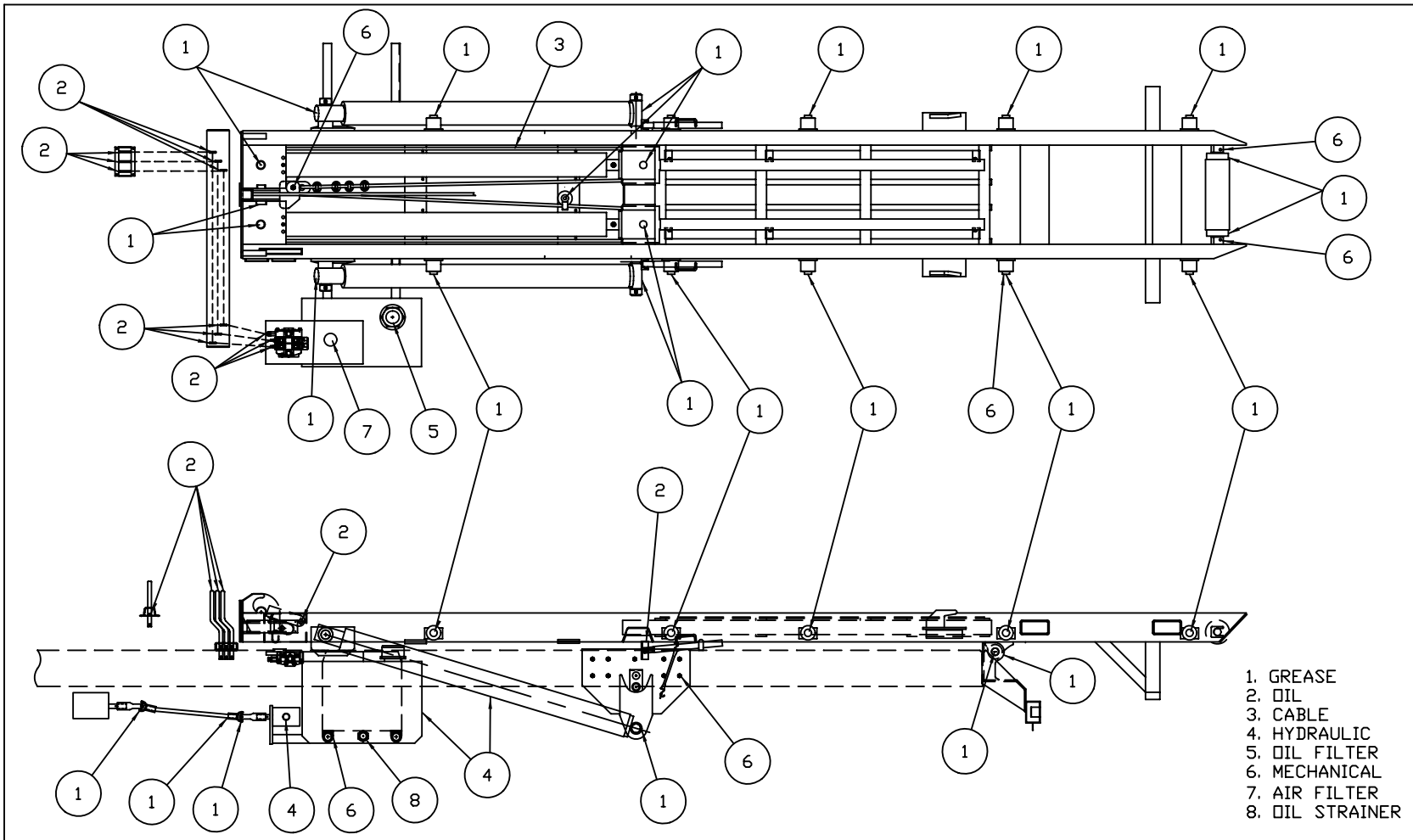
Wire Splicing

Use wire connectors with shrink tubing for water-tight connections.

Hoist Up & Back Up Alarms

Check to insure proper and safe operation.

NOTE: Always apply conductive grease in receptacles and in bulb sockets prior to re-assembly.



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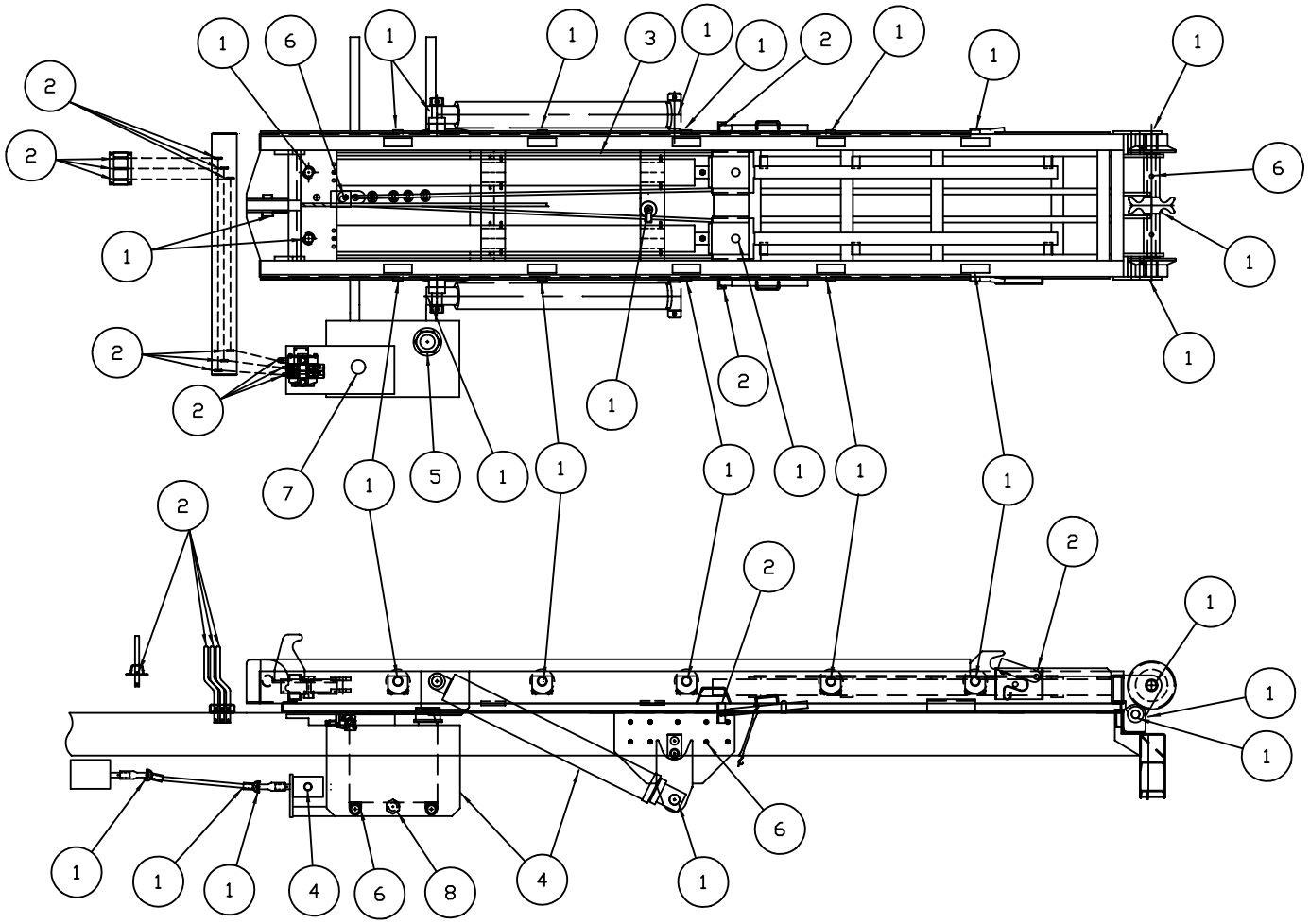
EGN DATE	NO.	BY				



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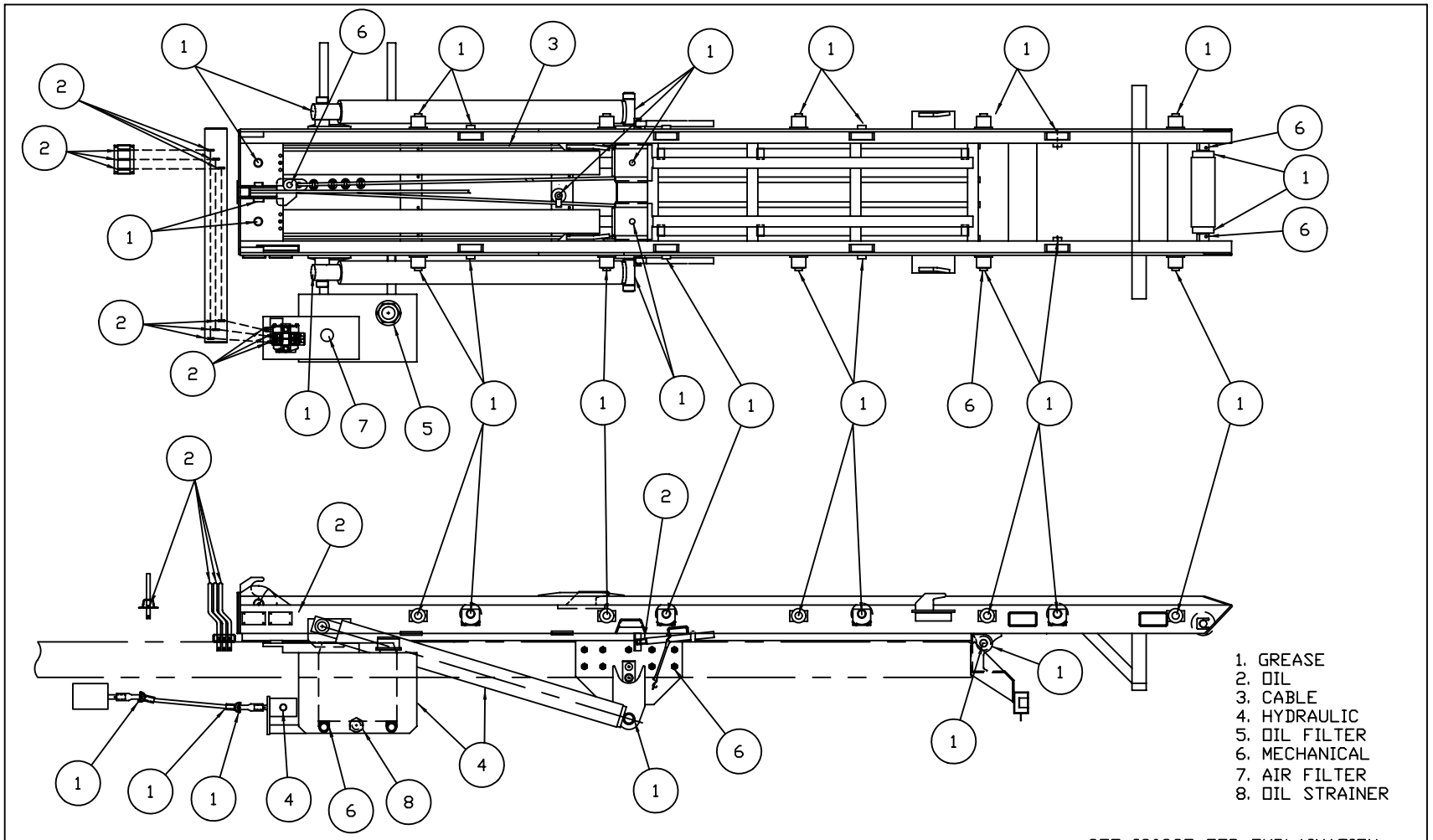

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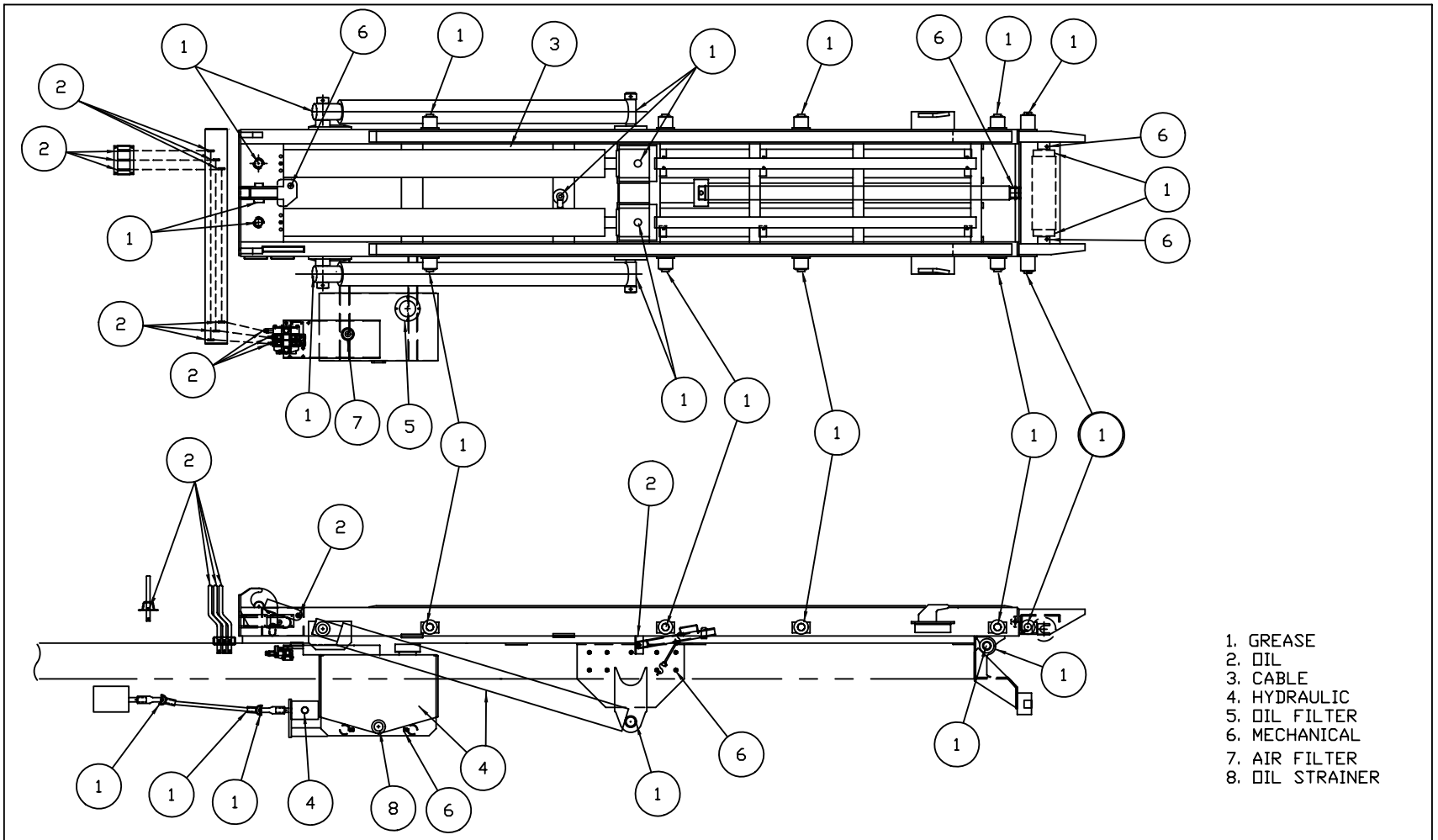

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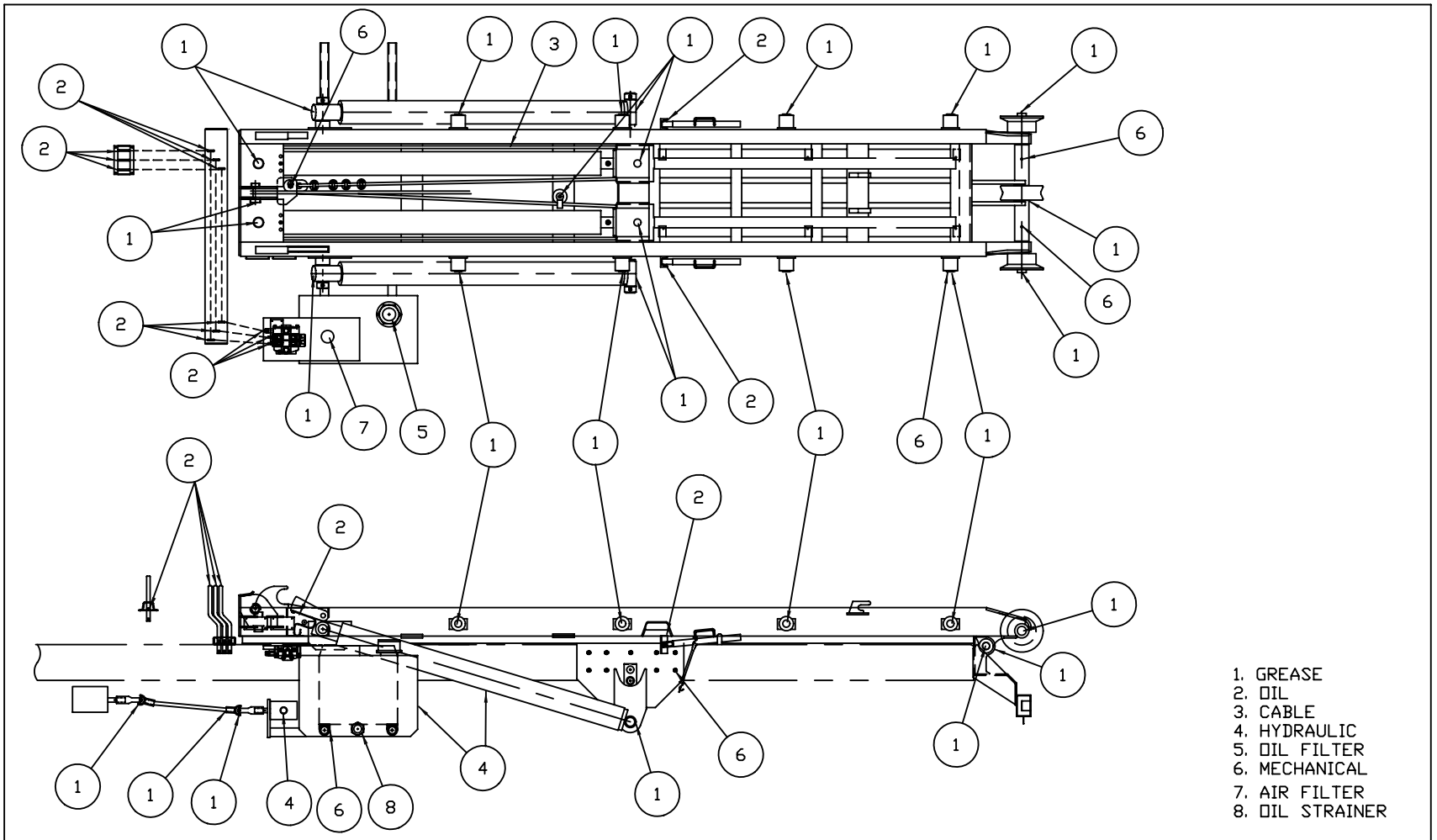

1. GREASE
2. OIL
3. CABLE
4. HYDRAULIC
5. OIL FILTER
6. MECHANICAL
7. AIR FILTER
8. OIL STRAINER

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ECN DATE	NO.	BY		DATE 9/3/82							

PROCEDURE FOR DISASSEMBLING & REASSEMBLING SINGLE STAGE CYLINDERS

The sectional drawing of this cylinder assembly will indicate many obvious procedures for the disassembly of the various components, for the replacement of seals and for the reassembly of the cylinder. Ordinary precautions to prevent damage to metal parts and to seals are required. Special care should be taken to protect the finishes of both the piston rod and cylinder bore as seal life is greatly dependent upon the smooth finishes of these surfaces. Sectional drawing available upon request.

1) Hold the cylinder secure as to prevent it from turning while you are removing the head. **Never clamp on the barrel at the head end of the cylinder assembly with an ordinary two jaw vise.** This may cause binding and/or galling of one or both parts in the area of the threaded head. Clamp at the cap end of the cylinder assembly while supporting the weight of the cylinder assembly.

2) Fully extend the piston rod. This expels the oil from the retract side of the cylinder and also simplifies manual withdrawal of the rod piston sub-assembly from the barrel. Air pressure may be used to extend the rod by attaching your air supply line to the extend port of the cylinder. **CAUTION: Slowly apply the air to maintain control of the extending rod and piston sub-assembly. Also, drain the oil from the retract port of the cylinder to reduce a chance of an oil spill. Once the rod is extended, use caution when disconnecting the air from the cylinder extend port.**

3) Using the spanner wrench, back out the threaded head from the barrel assembly by turning counter clockwise. The entire rod and piston sub-assembly may now be withdrawn for the barrel assembly bringing with it the head nut assembly.

4) With the rod and piston sub-assembly held secure to prevent it from turning, use the spanner wrench to remove the piston from the rod. **CAUTION: Do not clamp on the polished surface of the rod without providing protection to the polished surface.**

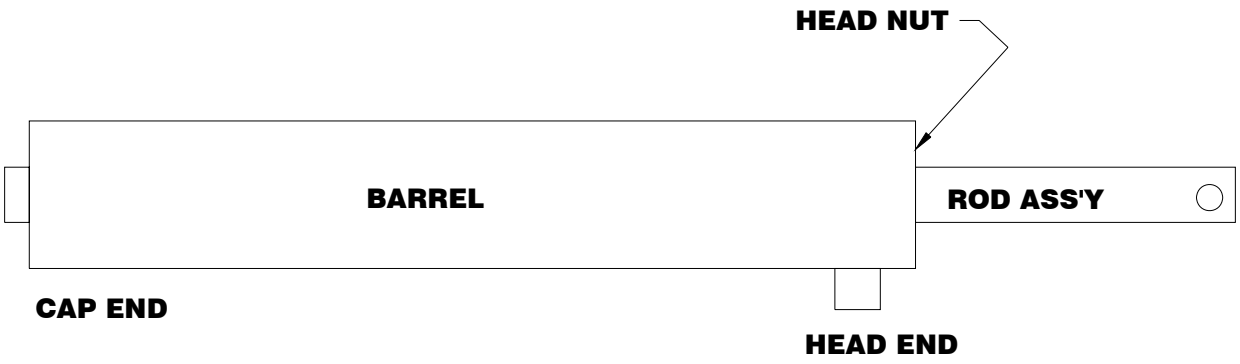
5) Remove the piston then the spacer and the head nut from the rod by sliding each over the threaded end of the rod being careful not to damage the threads.

6) Remove the old seals and bearings. All parts should be thoroughly cleaned. While cleaning, inspect all components for rough wear and determine whether the part can be cleaned up or replaced. Seals and bearings can then be installed in their respective grooves. The continuous piston seal ring can be stretched slightly with the use of the rounded blade screwdriver. This seal should then be pushed in place by hand. Careful reference to the drawing will show the proper installation of the seals noting the direction of the seal lips, etc.

7) The piston and rod sub-assembly can now be reassembled. Using a liberal amount of grease on both the inside diameter of the head and the surface of the rod, slide the head over the threaded stem end of the rod being careful not to damage the seals. Next install the spacer. Wipe the threads clean of any grease and apply Locktite #242 to the rod stem threads. Start the piston on the rod stem and tighten with the spanner wrench. Torque the piston to 2000 ft. lbs. or as much as you can possibly torque.

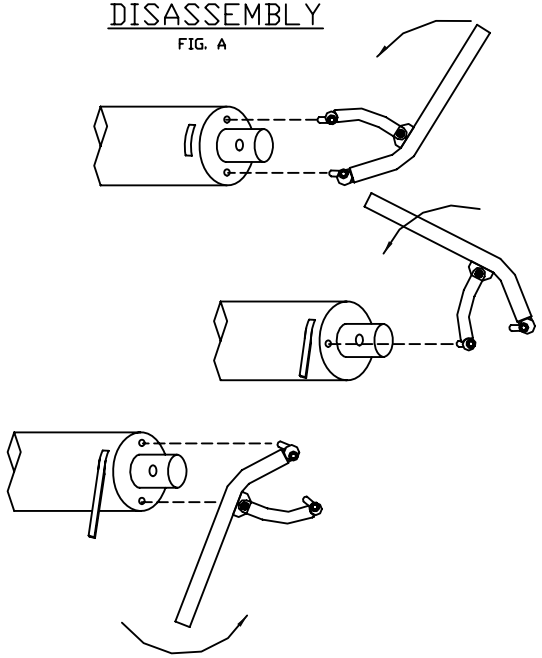
8) Apply grease to the piston and the inside threads of the barrel and insert the piston and rod assembly into the barrel. Take special care to avoid scraping the piston bearings and seals on the barrel threads. With the piston inserted about halfway into the barrel, slide the head into position in the barrel. With the spanner wrench, screw the head into position. Once the head has bottomed out into the barrel, tap the end of the spanner wrench with a mallet to insure proper penetration and tightness.

9) The cylinder can now be cycled with hydraulic pressure and tested for external and internal leaks along with proper function.



DISASSEMBLY

FIG. A



ASSEMBLY

FIG. A

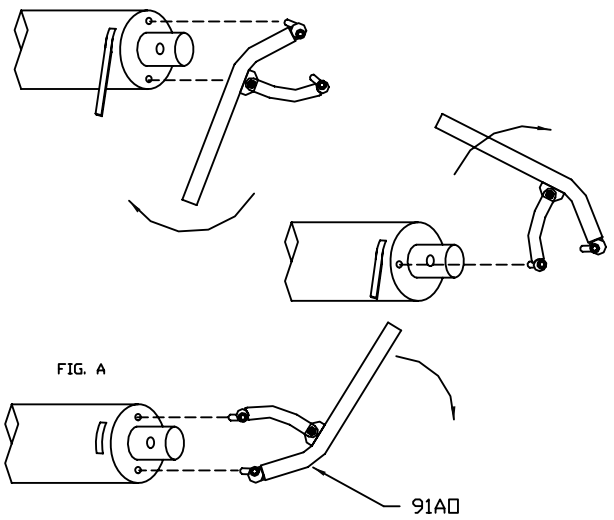


FIG. A

PACKING GLAND REMOVAL

FOR CYLINDERS 1031 & 1043

STEP 1: REMOVE RETAINER RING USING SPANNER WRENCH IN COUNTER CLOCKWISE MOTION AS SHOWN (FIG. A).
STEP 2: REMOVE INSIDE ASSEMBLY BY PULLING OUT PISTON ROD.
STEP 3: REPLACE SEALS AS INDICATED ON (IS0308) OR (IS0310). IT IS A RECOMMENDED PRACTICE TO COVER ALL INTERNAL PARTS WITH A FILM OF OIL BEFORE ASSEMBLY.
STEP 4: TO REASSEMBLE CYLINDER, REPLACE PISTON ROD ASSEMBLY AND GLAND. REPLACE NEW RETAINING RING USING SPANNER WRENCH IN A CLOCKWISE MOTION AS SHOWN (FIG. B).

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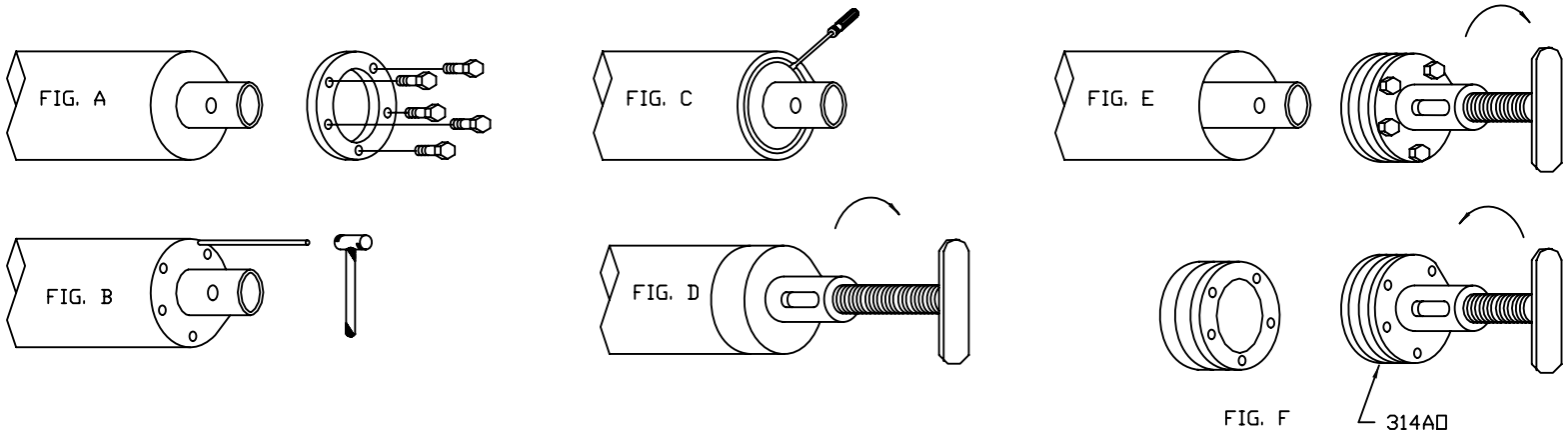
					SCALE 1/10" = 1"			NO. IS0321	
					BY GEORGE				
ECN DATE	NO.	BY			DATE 6/24/99				



PACKING GLAND REMOVAL

FOR CYLINDERS 2477, 1040, 2462, 1054, 2463 *1126

STEP 1: REMOVE FIVE CAP CSREWS AND OUTSIDE RETAINING PLATE AS SHOWN (FIG. A)
STEP 2: USING A HAMMER AND BRASS OR SOFT METAL PUNCH, TAP PACKING GLAND BACK TO EXPOSE RETAINING RING AS SHOWN (FIG. B).
STEP 3: REMOVE RETAINING RING WITH SCREWDRIVER AS SHOWN (FIG. C).
STEP 4: BOLT TOOL NO. 314A0 TO PACKING GLAND WITH CAP SCREWS FROM STEP 1, MAKING SURE END OF TOOL PROPERLY FITS INTO AND ON CYLINDER ROD END AS SHOWN (FIG. D).
STEP 5: TURN HANDLE CAREFULLY IN A CLOCKWISE DIRECTION UNTILL PACKING GLAND IS OUT OF CYLINDER ROD AS SHOWN (FIG. E).
STEP 6: TURN SCREW ON TOOL IN COUNTER CLOCKWISE DIRECTION TO RELEASE PACKING GLAND, THEN REMOVE CAP SCREWS AS SHOWN (FIG. F).

M:13

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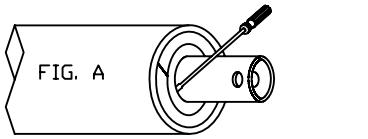
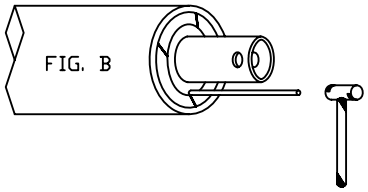
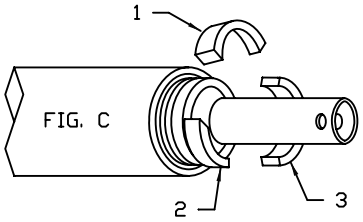
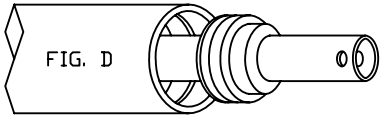
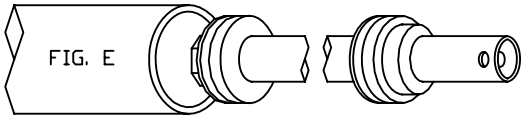
ECN DATE	NO.	BY		DATE 6/24/99						











PACKING GLAND REMOVAL

STEP 1: REMOVE SNAP RING USING SCREWDRIVER AS SHOWN (FIG. A).
STEP 2: PUSH PACKING GLAND INWARD UNTIL THE BACH RETAINER INSERTS ARE FREE (FIG. B). LOOSEN AND REMOVE NO. 1 (FIG. C) FIRST, THEN REMOVE NOS. 2 AND 3.
STEP 3: PULL OUT ON PISTON ROD UNTILL PISTON PUSHES PACKING GLAND TO OUTSIDE OF CYLINDER BODY (FIG. D & E).
STEP 4: REPLACE SEALS AS INDICATED ON (IS0315) IN THIS MANUAL. IT IS A RECOMMENDED PRACTICE TO COVER ALL INTERNAL PARTS WITH A FILM OF OIL BEFORE ASSEMBLY.
STEP 5: TO REASSEMBLE CYLINDER, PUSH PISTON ROD AND GLAND ASSEMBLY BACK INTO CYLINDER BODY. REPLACE TRIPLE-LOCK RETAINER. PULL BACK ON PISTON ROD ASSEMBLY AND REPLACE SNAP RING.

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				SCALE 1/10" = 1"						
				BY GEORGE					NO. IS0319	
ECN DATE	NO.	BY		DATE 6/24/99						

DISASSEMBLY

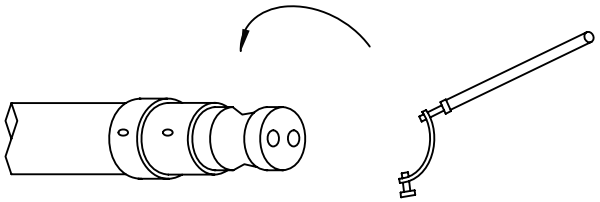

FIG. A

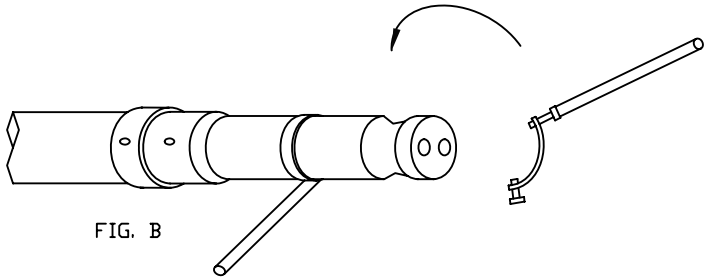

FIG. B

ASSEMBLY

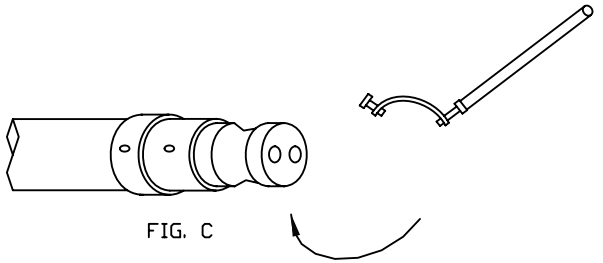

FIG. C

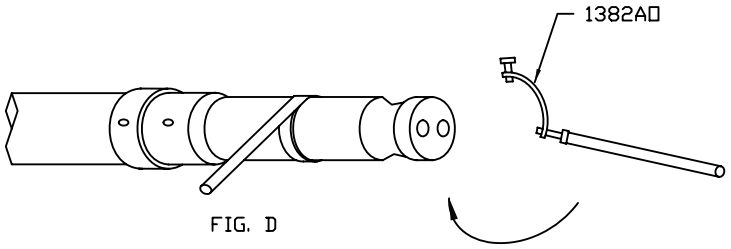

FIG. D

WARNING: NEVER USE AIR PRESSURE TO TAKE CYLINDER APART. TO REPLACE PACKING KIT FOLLOW ATEPS 1, 2, 4, AND 6. TO REPLACE COMPLETE SEAL KIT FOLLOW STEPS 1 THRU 6.

STEP 1: REMOVE BLEEDER SCREWS. PULL CULINDER ROD END OUT A FEW INCHES AND GRIP THE BARRLL WITH A STRAP WRENCH TO PREVENT SCORING. (FIG. B).
STEP 2: UNSCREW GLANDS BY TURNING COUNTER CLOCKWISE. USE A STRAP WRENCH AND A SPANNER WRENCH (FIG. A & B).
STEP 3: PULL STAGES COMPLETELY OUT TO REPLACE PISTON RINGS. INSPECT ALL INSIDE AND OUTSIDE CYLINDER BARRELS FOR SCRATCHES. LIGHT SCRATCHES CAN BE REMOVED BY POLISHING WITH CROCUS CLOTH.
STEP 4: TO REASSEMBLE THE CYLINDER, USE A RING COMPRESSOR ON PISTON END TO PREVENT BREAKING RINGS OR DAMAGING THREADS.
STEP 6: REPLACE PACKING IN GLAND. APPLY THREAD SEALER TO THREADS AND REASSEMBLE GLAND BY TURNING CLOCKWISE.

NOTE: BLEED AIR OUT OF CYLINDER BEFORE TIGHTENING BLEEDER SCREWS.

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				SCALE 1/10" = 1"						
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ECN DATE	NO.	BY		DATE 6/24/99						

PROCEDURE FOR DISASSEMBLING AND REASSEMBLING TELESCOPIC CYLINDERS

STEP 1

The cylinder is best serviced mounted in the vertical position, for both disassembly and assembly. Also, it is best located where a hoist can be used directly overhead of the cylinder for removing the plungers if complete disassembly is required. A typical stand is shown in Figure 1, made of angle welded to a base anchored to the floor and an adjustable wrap around chain to secure the cylinder to the stand. Because of oil spillage and safety, we recommend draining the cylinder of oil before disassembling. Lay the cylinder horizontally with the port down and open. Rotate the last plunger so the bleeder hole is on top and open.

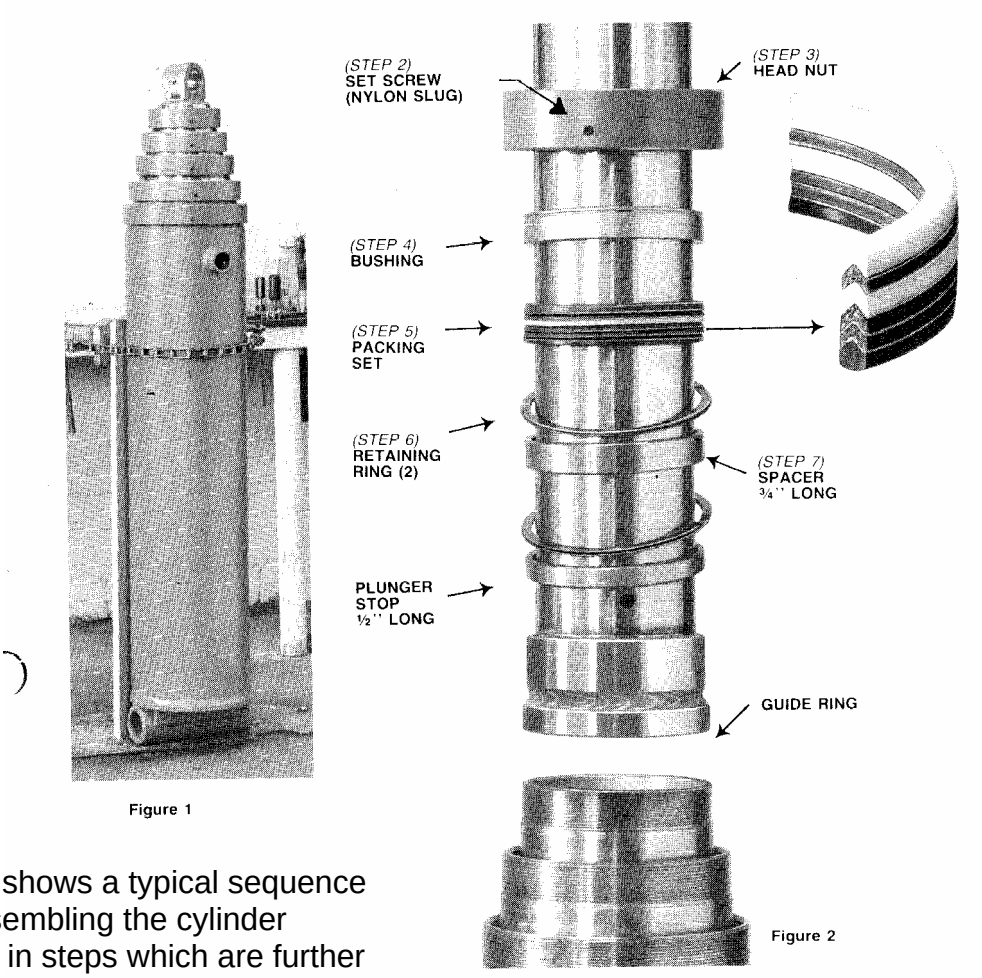


Figure 1

Figure 2 shows a typical sequence of disassembling the cylinder plungers in steps which are further described in this manual.

Figure 2

STEP 2

All head nuts are secured to the plunger by a set screw. Under the set screw is a nylon slug to protect the plunger threads. To remove the head nut the set screw must be loosened using an Allen wrench.

STEP 3

After the set screws have been loosened, tap head nut gently around its circumference, and unscrew the head nut with a chain wrench, or an equivalent tool. Do not use a chisel, punch, or weld any studs to the head nut to remove.

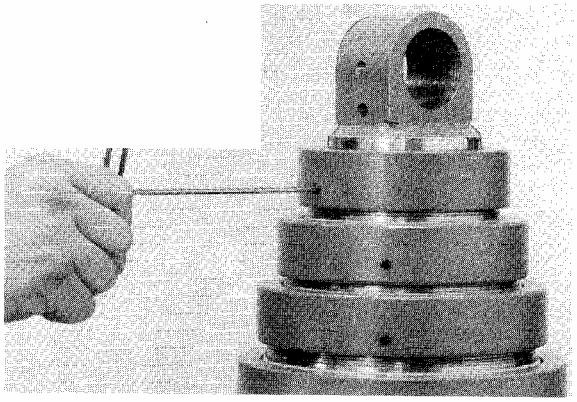


Figure 3

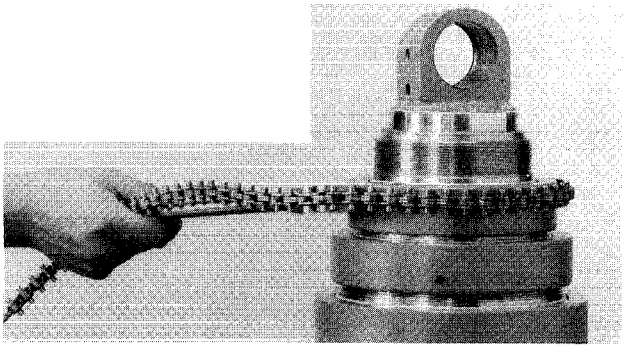


Figure 4

Typical tool end shapes for removing remaining parts, bushing, packing, retaining rings, and spacer.

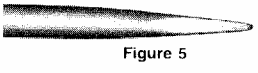


Figure 5

Used For:

Removing Bushings (Fig. 8)

Removing Retaining Rings (Fig. 10)

Installing Packing

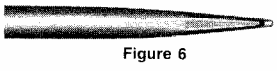


Figure 6

Used For:

Removing Packing (Fig. 9)

Removing Retaining Rings (Fig. 10)

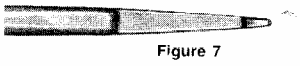


Figure 7

Used For:

Removing Spacer (Fig. 11)

Figure 8

STEP 4

Insert a screwdriver (Fig. 5) into the groove around the outside of the bushing. Tap gently upward with a mallet uniformly around the circumference of the bushing.

Figure 9

STEP 5

Use a tool similar to (Fig. 6) and jam the hooked type tool past each ring, twist and lift out each ring individually. Discard the packing, since the sealing lips of the V-rings may be damaged. When removing the packing, care must be taken not to scratch or score the packing bore or plunger.

STEP 6 ⟶

Using a tool shown in Fig. 6 insert the hooked end into the retaining ring slot. Force the retaining ring partially out of the groove. With the second tool shown in Fig. 5 work the end of the tool under the end of the ring partially out of its groove. Working both tools together, unwind the retaining ring out of the cavity.

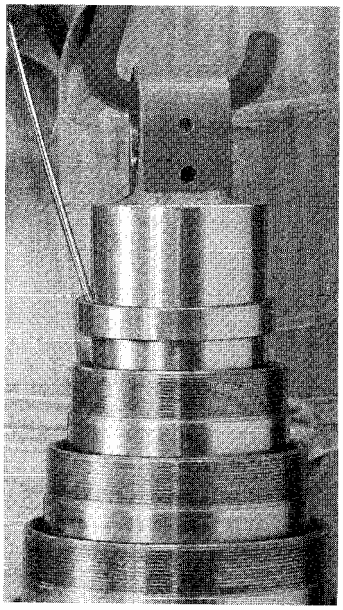


Figure 11

⟵ STEP 7

Using a tool shown in Fig. 7, insert the tool between the spacer and plunger. Hook the bottom of the spacer. As you lift the spacer, tap the plunger with a soft mallet and work the spacer up and out of the cavity. Repeat Step 6 to remove second retaining ring. The plunger is now free to lift out. The plunger stop will come out with the plunger.

REASSEMBLY OF CYLINDER

All bores in the packing area and plunger outside diameters must be free of tool marks and scratches. Polish with a fine paper, crocus cloth or a Scotch Brite pad. *All* parts should be clean and free of any contamination. A complete Major Repair Kit as called out on Page 7 (ordering information) is recommended. Drop all plungers into the body in the vertical position, as shown in Figure 1. Assemble the remaining parts in the reverse sequence as listed in Figure 2. The packing should be presoaked in oil before installing. (Do not use a detergent oil) Note Figure 2 for the direction of the packing. Using a tool similar to Figure 5, seat each lip individually, making sure packing is nestled uniformly. After the head nuts are adjusted, make sure there is a nylon slug under the set screw before securing the head nut to the plunger. After installing the cylinder in the unit, crack the bleeder screw open and extend the cylinder to bleed the air. More than one extension may be needed to assure all the air is removed and cylinder operates smoothly.

PROCEDURE FOR ADJUSTING HEAD NUTS ON TELESCOPIC CYLINDERS

WARNING! Before making adjustments or repairs to the cylinder when mounted in the unit use strong, heavy, positive, supports to hold the body from accidentally lowering.

NOTE: Pressure must be relieved in cylinder before attempting to adjust head nuts.

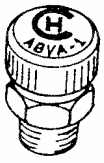
A) For leaking Cylinders:
- Step 1) Loosen set screw in head nut.
- Step 2) Tap head nut lightly around circumference with a hammer.
- Step 3) Using a chain wrench back head nut off one half to one full turn. If plunger turns as you are turning head nut the plunger will have to be held, preferably with a strap wrench.
- Step 4) Cycle cylinder two or three times. This will help to seat any vee rings that might be rolled.
- Step 5) Tighten head nut one half turn further than it was loosened.
- Step 6) Tighten set screw.

B) For Mis-sequencing Cylinders:
- Step 1) Loosen set screw in head nut.
- Step 2) Tap head nut lightly around circumference with a hammer.
- Step 3) Using a chain wrench back off head nut of sticking plunger one half turn. If this does not help, turn head nut another half turn. If plunger is still sticking tighten next plunger that is extending. If plunger turns as you are turning head nut the plunger will have to be held, preferably with a strap wrench.
- Step 4) Tighten set screw.

If adjustments fail to correct the problem, contact the factory for further instructions.

AUTOMATIC BLEEDER SCREW FOR TELESCOPIC CYLINDER

The automatic bleeder valve eliminates time consuming and hazardous air-bleeding maintenance and problems common with hydraulic systems with entrapped air.



1. To **Close**, turn cap clockwise all the way in.
2. For **Automatic Bleeding**, turn cap counter clockwise all the way out. The proper operation necessitates a clean hydraulic system. With each lifting cycle of the cylinder, a small amount of fluid will be discharged through the valve, which is normal and does not constitute a faulty air bleeder valve assembly.
3. For **Manual Bleeding**, cap is approximately one turn off the closed or bottomed out position.

FLUSHING THE HYDRAULIC SYSTEM

This procedure tells how to properly flush oil from the hydraulic system on all standard two cylinder winch cable model truck mounted hoists. (Ex. U2, U3, U4, U5, U6, UT, UM, UX)

Before starting the following procedures, make sure that all hydraulic cylinders are retracted completely.

1) Shut gate valve, located at bottom inside of the oil tank, and close the valve by turning the knob clockwise. Remove the suction line at the gate valve and drain oil from tank using the gate valve to regulate the flow.

2) Once all the oil has drained out, remove the suction strainer which is located in the tank where the gate valve is. With the strainer out, clean with a solvent by flowing the solvent from the inside of the strainer out. After cleaning, check that the relief valve in the end of the strainer is operational. It should push inwards with about 3 pounds of pressure.

3) Remove the return filter and replace it with a new filter. **DO NOT REUSE THE OLD RETURN FILTER**. Reinstall return filter and suction strainer using appropriate thread sealant and/or "O" rings. The "O" rings need to be checked for nicks or cuts before reinstalling. Also reinstall the suction hose to the gate valve. **OPEN GATE VALVE (COUNTERCLOCK WISE) FULLY**.

4) Trace down the retract line to the main control valve from the lift and winch cylinders. Mark the lines so that they don't get crossed when you reconnect them to the control valve. Disconnect the retract lines at the main control valve and place the lines in an appropriate sized container or add enough hose to the retract lines that they can reach into a 55 gallon drum.

5) Fill the oil tank with AW32 or equivalent type hydraulic oil so that it just comes to the top of the sight gauge mounted on the oil tank.

6) Start up the truck and engage the PTO. With the truck idling and the PTO running, activate the main control valve lever to "extend" or "on" for the winch cylinders. This will force the oil out of the retract hoses that are disconnected and flush the old oil out. When the winch cylinders are completely extended, shut the truck off and reconnect the retract hose for the winch cylinders back on the main control valve. Start the truck again, engage the PTO and retract the winch cylinders completely. Check the oil level in the tank and fill to the top of the sight gauge again. **Before starting step 7, determine if you have telescopic lift cylinders or single stage lift cylinders**. UT, UM, UX and some U5 model hoists have telescopic or multi state cylinders. If you have telescopic (multi stage) lift cylinders, proceed to step 8.

7) For single stage lift cylinders, with the retract hose in a container or 55 gallon drum, activate the main control valve lever for the lift cylinders to extend or raise the hoist. This will force the old oil out of the lift cylinders. When the lift cylinders are fully extended and raised, shut off the truck and reconnect the retract hose to the main control valve. Start the truck, engage the PTO and lower the hoist to retract the lift cylinders. Check the oil level and add if necessary. Cycle the cylinders for the winch and lift to purge any remaining air out of the system. Check for leaks and correct oil level.

8) For multi state (telescopic) lift cylinders, first locate the hoses at the base or bottom of the lift cylinders. Mark them in a way to identify retract and extend (colored bread ties work well) for ease in reconnecting later. Disconnect the hoses at the base of the cylinders so the oil can drain in a 5-gallon bucket. When both lift cylinders are drained, reconnect the hoses to their respective ports. Opening the bleeder screws on the tops of the cylinders will speed up the draining process. Reconnect the retract hose at the main control valve for the lift cylinders. Double check all the hose connections that were mentioned in step 4. Fill the oil tank to 1/2 to 1 inch from the top of the sight gauge. (Be sure to tighten bleeder screws before start up.)

9) Start up truck and engage PTO. At an idle, operate the main control valve lever to the “retract” or “lower” position until the cylinders are full and the hydraulic system is dumping over the relief valve. Now move the lever to the raise position to raise the hoist approximately 12 to 18 inches above the subframe. At this time, using the bleeder screws, bleed out any air trapped in the cylinder. Once pure oil comes out of the bleeders, tighten the bleeders and cycle the hoist to full up and full down several times. This will finish purging any existing air trapped in the lift cylinders. Lower hoist and check the oil level in the oil tank. Refill if necessary and check for leaks.

Conserve resources and recycle the hydraulic oil. Always dispose the oil properly. If you have any questions pertaining to the procedures involved, please contact the Customer Service Department at Galbreath Inc. 800-285-0666

HOIST MOUNTING SECTION (H)

MINIMUM RECOMMENDED TRUCK SPECIFICATIONS*

18,000# Front Axle With Power Steering

44,000# Rear Axle With Walking Beam Suspension

Bending Moment For Each Frame Channel 2,400,000 in. lbs.

36,000 P.S.I. Chassis Frames - Minimum Section Modulus 32 $in.^3$

55,000 P.S.I. Or More Chassis Frames - Section Modulus 24 $in.^3$

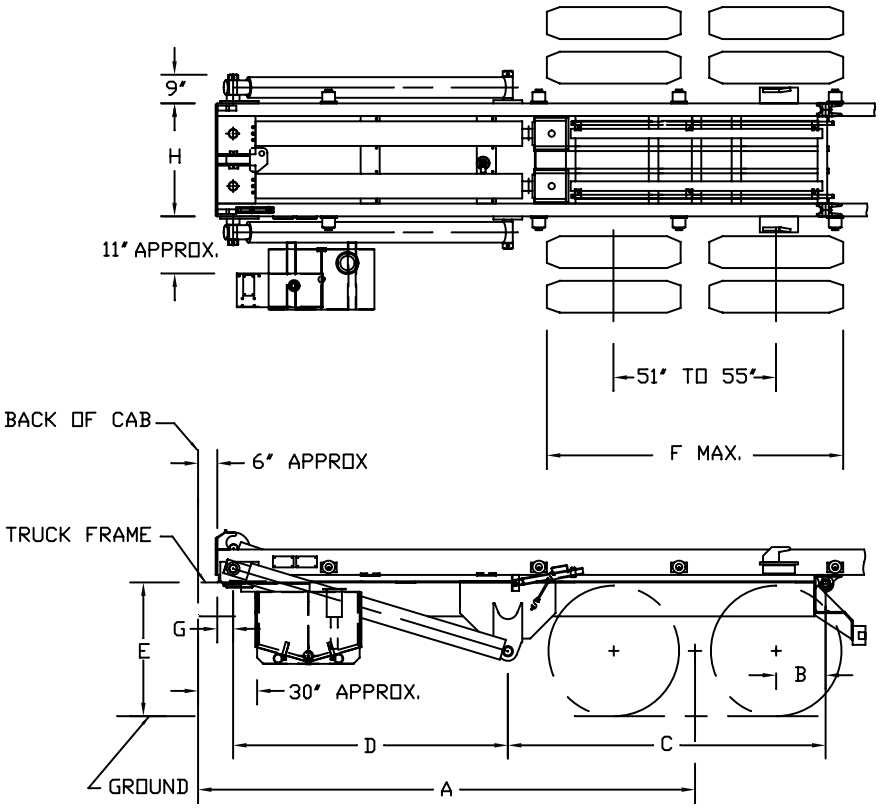
NOTE: CHECK LOCAL REGULATIONS

*OPERATOR IS RESPONSIBLE FOR COMPLIANCE WITH LOCAL, STATE & FEDERAL WEIGHT REGULATIONS.

! ! CAUTION ! !

THIS EQUIPMENT SHOULD BE OPERATED BY PROPERLY TRAINED PERSONNEL. THE HOIST SHOULD NOT BE USED TO LIFT AND HAUL ANY WEIGHT THAT IS BELIEVED TO EXCEED THE LOAD RATING OF ANY OF THE INDIVIDUAL COMPONENTS OF THE ENTIRE PIECE OF EQUIPMENT (EX: HOIST, TIRES, TRUCK CHASSIS, SUSPENSION...ETC. IMPROPER USE, MISUSE, OR LACK OF MAINTENANCE COULD CAUSE INJURY TO PERSONS AND/OR DAMAGE TO PROPERTY.

RECOMMENDED TRUCK CHASSIS REQUIREMENTS



NOTE: (1) "H" DIMENSION IS 35" ON (HH) SERIES, ALL OTHERS ARE 35 1/2".
(2) "E-MAX" DIMENSION FOR (OR & IO) MODELS ONLY.

MODEL	A	B	C	D	E-MAX	F-MAX.	G
U4-156	156"	15 1/2"	99 3/4"	86 1/4"	43"	97"	5 1/2"
U5-156	156"	15 1/2"	99 3/4"	86 1/4"	43"	97"	5 1/2"
U4-174	174"	15 1/2"	99 3/4"	86 1/4"	43"	97"	23 1/2"
U5-174	174"	15 1/2"	99 3/4"	86 1/4"	43"	97"	23 1/2"
U5-182	182"	15 1/2"	99 3/4"	86 1/4"	43"	97"	31 1/2"
U5-186	186"	15 1/2"	99 3/4"	86 1/4"	43"	97"	36"
U5-194	194"	15 1/2"	150"	71 1/2"	43"	147"*	7 1/2"
UT-174	174"	15 1/2"	152 3/8"	52 5/8"	43"	149"*	5 1/2"
UT-182	182"	15 1/2"	152 3/8"	52 5/8"	43"	149"*	13"
UT-186	186"	15 1/2"	152 3/8"	52 5/8"	43"	149"*	15 1/2"
UT-194	194"	15 1/2"	152 3/8"	52 5/8"	43"	143"*	25 1/2"
UX-169	169"	17 1/2"	125 1/4"	60 3/4"	46"	107"	24"
UX-178	178"	17 1/2"	110 1/2"	60 3/4"	46"	107"	46"
UM-194	194"	15 1/2"	99"	52 1/2"	43"	96"	79"
U75-174	178"	15 1/2"	99 3/4"	86 1/4"	43"	97"	23"
U75-194	194"	15 1/2"	152 3/8"	52 5/8"	43"	147"*	24"

NOTE: IF THE ABOVE CHART INDICATES A POSSIBLE TRUCK TO HOIST CLEARANCE PROBLEM, INVESTIGATE THOROUGHLY BEFORE MOUNTING HOIST.

*INCLUDES 3RD AXLE

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REF. IS5595

DXF

BOOK NO. 18

NO. IS0270

HOISTS H1
RECOMMENDED TRUCK CHASSIS
U5-OR/IO/EX/HH HOISTS

DO NOT SCALE DRAWING
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BY GEORGE
DATE 11/26/96

Galbreath
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NO.	BY

ECN DATE

Truck Preparation And Hoist Mounting Procedure

If the truck body (chassis) meets all of the recommended requirements, the following procedure should guide the installer to properly mount the hoist.

CAUTION: **Some manufacturers and makers of trucks will require "customized" installation techniques to be utilized. A qualified individual must analyze all stress forces acting upon any customized construction so as to not create the possibility of a failure or dangerous situation.**

NOTE: Any unremovable obstacle such as a muffler, air tank, battery box, etc., must be considered as cab. There must not be any protrusions above the truck chassis frame.

STEP 1. Carefully check the "Recommended Truck Chassis Requirements" and "Minimum Recommended Truck Specifications" to assure proper clearance and strength before mounting hoist. Inspect for any obstacles such as air tanks, air dryers, fuel tanks, fuel filters or brackets which may have to be relocated to provide clearance for lift cylinders, controls, tool box, oil tank, lower lift brackets, and other options such as 3rd lift axle. The lift cylinders require a minimum 2 1/2" clearance around their path of operation. The oil tank mounting bracket requires 30" minimum clearance between the back of the cab and the front edge of the tank mounting bracket. This clearance is required for the valve and valve controls.

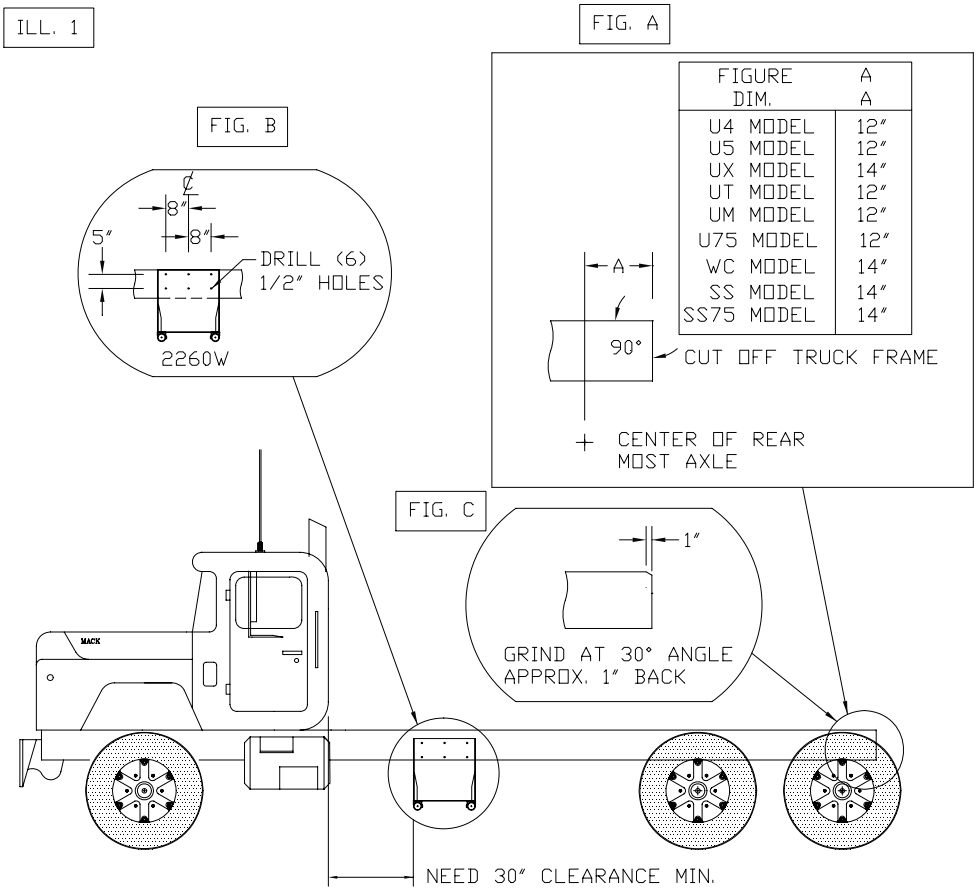
STEP 2. After it has been determined that the hoist will fit the truck frame, including any and all optional equipment, cut the rear of the truck frame off behind center of rear most axle. (IS4121, Fig. A, IS4122, Fig. E, Fig. F) The frame should be torch-cut at a 90^{o} angle to the truck frame for "EX-HH-DL-OR-IX-EH" Models. For "SI" Models, see IS4122, Fig E and for "MM & IH" Models, see Fig. F. Then grind the top edge of truck frame corners to allow room to weld and fit to hoist frame. (IS4121, Fig. C, IS4122, Fig. E, Fig. F)

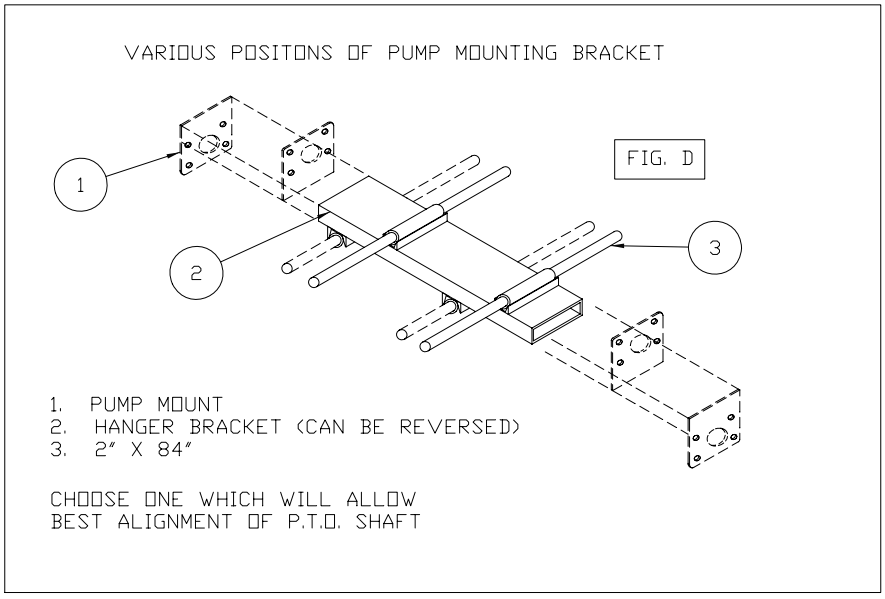
STEP 3. Mount oil tank mounting brackets to truck frame with six 1/2" bolts. NOTE: Use existing frame holes whenever possible for mounting brackets (IS4120, Fig. B) Located 30" from back of cab, fuel tank or battery box. Install other options, ie, 3rd axle, tarper gantry, behind cab oil tank, etc.

STEP 4. Insert two (2" x 84") pipes through oil tank mounting brackets and pump hanger bracket. (IS4121, Fig. D) Note various positions available for mounting pump hanger bracket.

STEP 5. Place hoist squarely on truck frame and clamp in place. Recheck for any clearance problems.

ILL. 1





R1 ADDED U75, WC & SS MODEL

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BOOK NO. 18

NO. IS4121

HOISTS H1
PUMP MOUNTING BRACKET
OIL RESERVOIR BRACKET
TRUCK FRAME CUTOFF

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BY GEORGE
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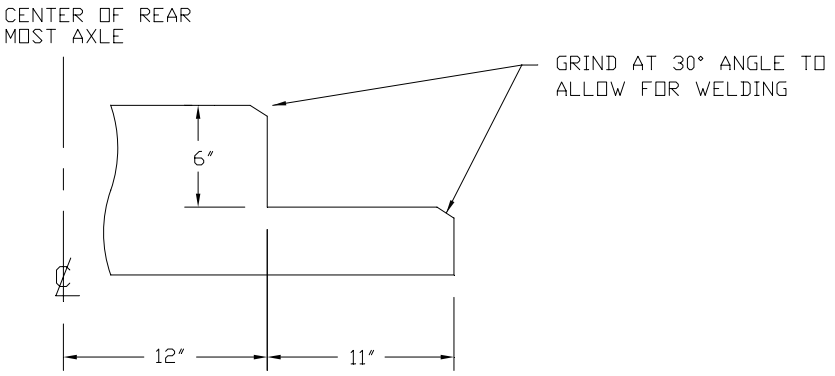
ILL. I CONT.

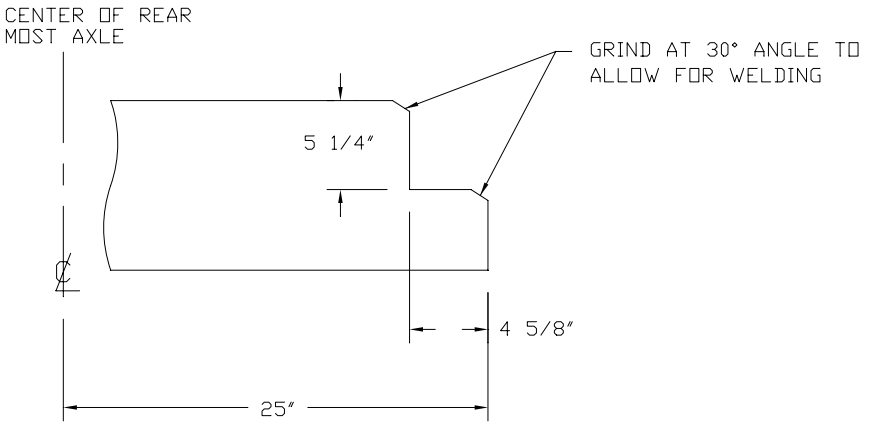
FOR "SI" MODEL HOISTS ONLY

FIG. E



FOR "MM" & "IH" MODELS ONLY

FIG. F



R1: CORRECTED MISSPELLED WORD

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HOISTS H1
TRUCK FRAME CUTOFF

DXF
BOOK NO. 18
NO. IS4122

STEP 6. Weld the hoist subframe apron to the ends of the truck frame, outside and inside. (IS4120, Fig. G) A continuous up-weld, minimum of 3 passes (min. 3/8 fillet), is required. NOTE: It is recommended to tack weld first, and then recheck for squareness before welding solid. This will reduce the possibility for the hoist frame shifting as the welds cool. **CAUTION: Never weld across the truck chassis frame flange upper or lower.**

STEP 7. Slide lower lift bracket (2375W) into space under hoist sub-frame. Locate lower lift bracket from upper lift bracket according to proper dimension A. (IS4120, See Chart) NOTE: Usually there are existing holes in truck frame that must be utilized. (Crossmembers, Brake Valves, Etc.)

STEP 8. Before drilling lower lift bracket into place, install the lower lift bracket shaft. There must be a minimum of 5" clearance between the spacer pipe and truck drive shaft. If 5" clearance is not obtainable with the standard shaft, a drop center shaft is available from the factory. (IS4116, Fig. H & I)

STEP 9. If the drop center shaft is to be used, remove one lower lift bracket, install drop center shaft, replace lower lift bracket, reset measurement, clamp, drill, and bolt to side of truck frame. The standard straight shaft may be installed by sliding straight through spacer pipe and lower lift plates. Drill 5/8 holes and torque all 5/8 (Grade 5 or better) mounting bracket bolts to 150 ft. lbs.

STEP 10. Weld lower cylinder shaft pipe securely as shown in IS4116, Fig. I and center hoist sub-frame to lower lift bracket as shown in Illustration III, Fig. H & I. Weld as illustrated. NOTE: Occasionally, due to variations in truck chassis, it may become necessary to use alternate hardware parts such as bolts, pipe and fittings, hoses, etc. If such conditions arise, good mechanical judgement should be exercised and alternate parts must be purchased by the installer. **NOTE: When installing the 2348W drop shaft, after shaft is positioned, weld anti-rotation blocks to the inside of the lift plate. Do not weld shaft to lift plate or to anti-rotation blocks.**

ILL. II

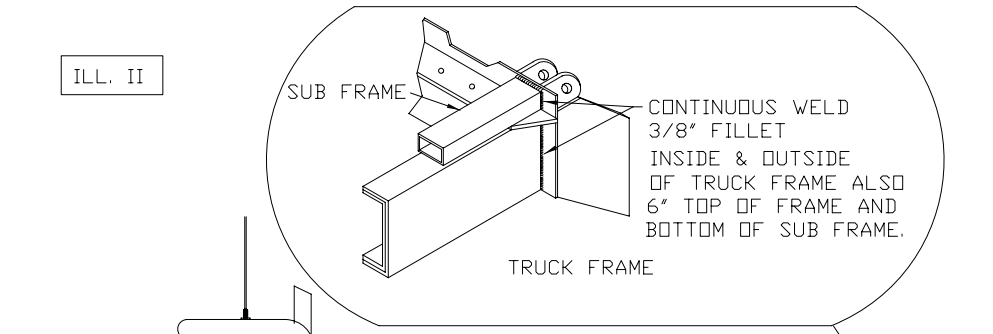
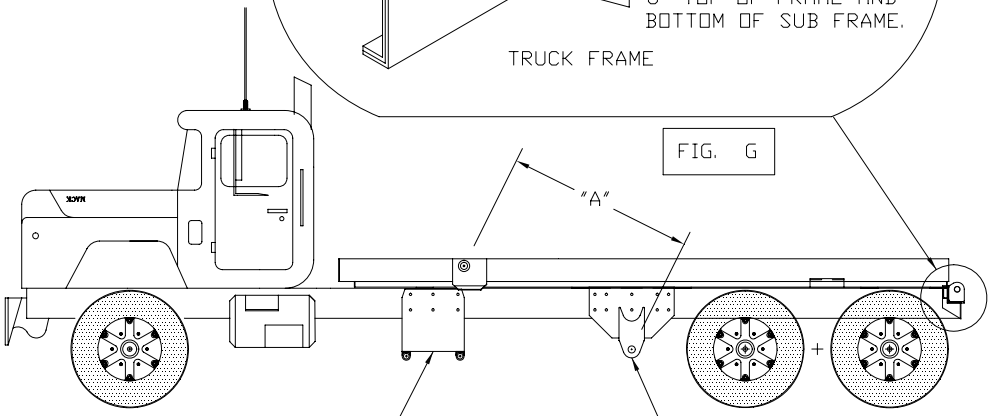


FIG. G



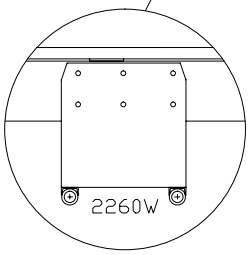


FIG. E

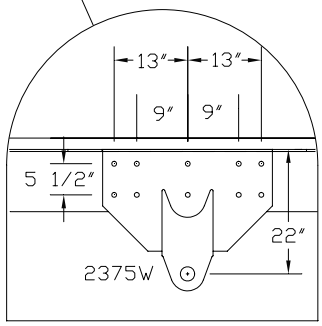


FIG. F

MODEL NO.	DIM. A
U4-156	90 3/32"*
U5-156	90 3/32"*
U4-174	90 3/32"*
U5-174	90 3/32"*
U5-182	90 3/32"
U5-186	90 3/32"
U5-194	76 3/32"
UT-174	58 3/4"
UT-182	58 3/4"
UT-186	58 3/4"
UT-194	58 3/4"
UX-169	66 3/32"
UX-178	66 3/32"
UM-194	58 3/4"
U75-174	90 1/16"
U75-194	58 1/2"

* NOTE: THE "MM" SERIES, U4-IH-156, U5-IH-156 HOISTS ARE 66 3/32".

R1 ADDED U75 MODEL

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HOISTS H1
MOUNTING LOWER LIFT CYL BRKT
HOISTS

DXF
BOOK NO. 18
NO. IS4120

STANDARD STRAIGHT SHAFT

ILL. III

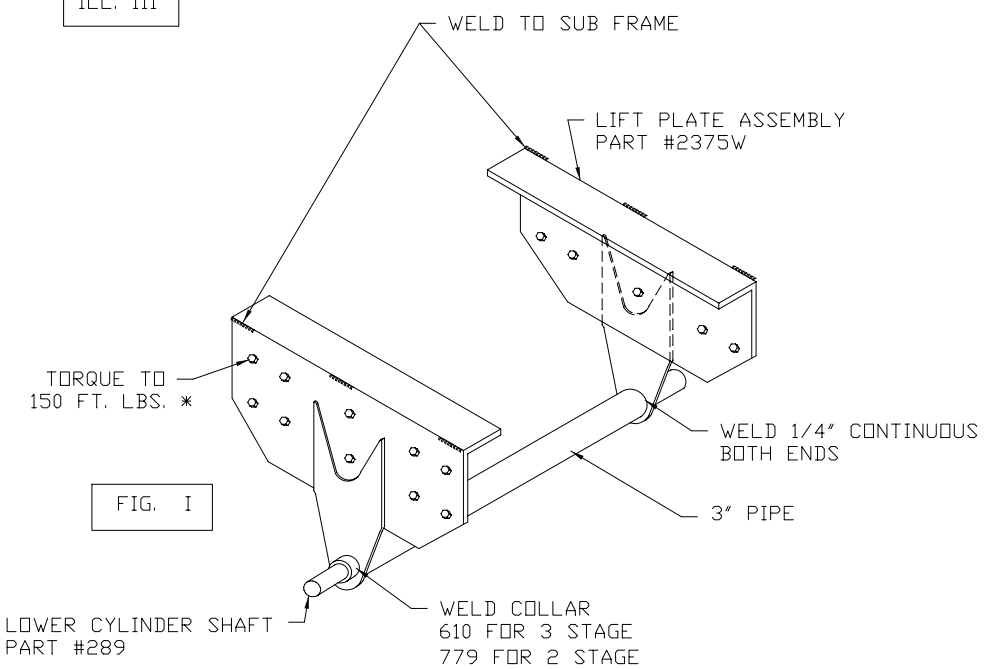

FIG. I

* 75,000 LB RATED MODELS TORQUE TO 330 FT. LB.

R1 3" PIPE WAS 4" PIPE

DROP CENTER SHAFT

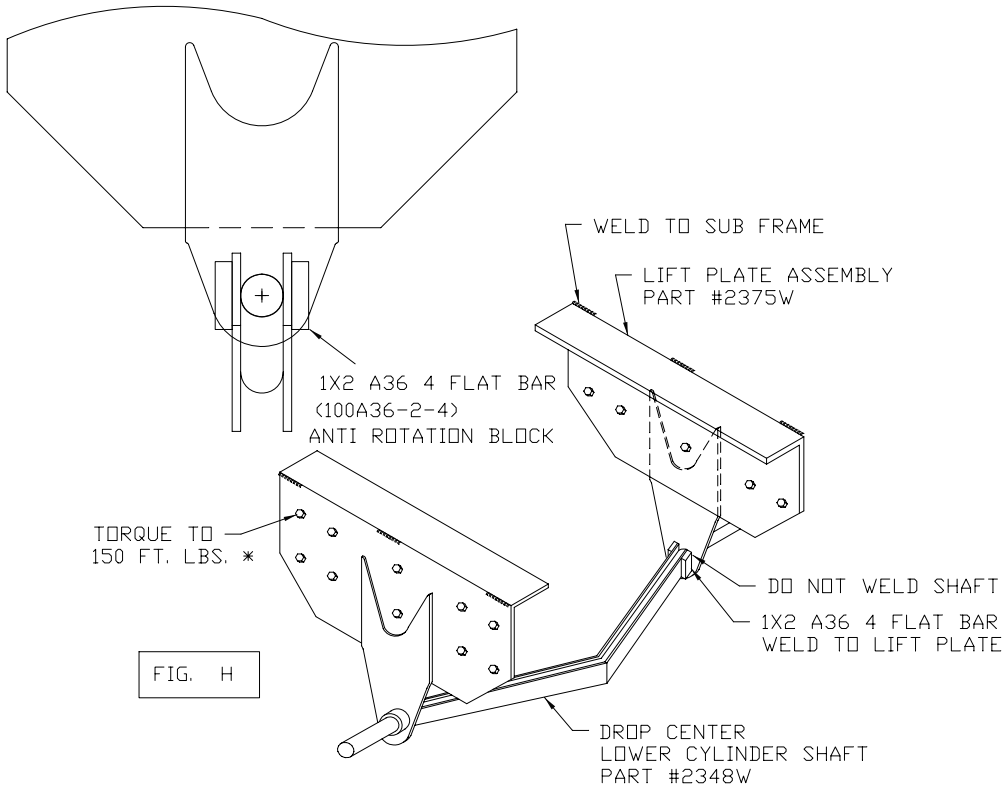

FIG. H

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HOISTS H1
LOWER LIFT CYL. MTG. BRACKET
ALL HOISTS

BOOK NO. 18
NO. IS4116

DXF

P.T.O. & Pump Mounting Instructions

STEP 11. Slide lift cylinders onto upper and lower mounting shafts and bolt on collars using spacer washers (1 inside cylinder & 2 outside) on narrow frame trucks. Washers used on lower shaft only.

STEP 12. Install P.T.O. by the Manufacturer's Instructions and supplied with the P.T.O.

CAUTION: **The Power Take-Off selection should be done with care. For Diesel Engine, the P.T.O. should be 85% to 100% of engine R.P.M. For Gas Engine, the P.T.O. should be 65% to 80% of engine R.P.M. The torque required is 110 ft. lbs. minimum.**
Proceed with the next two steps referring to IS-274 (Figure J).

STEP 13. If installing a direct mount pump, install pump to P.T.O. and install pump support bracket from the pump to the transmission housing. Typical mounting brackets, such as 4031BO, 4032BO, 4035BO, may be used. Reference parts section of this manual for additional information. Proceed to Step 15

If installing a drive line pump, establish the best method for installing hanger bracket and weld pump mount to bracket to obtain the shortest practical length of P.T.O. to pump drive shaft.

CAUTION: **The drive shaft is not to exceed 36" without the use of a center support bearing.**

STEP 14. Use a standard universal joint on the P.T.O. end and a slip universal joint on the pump end. Cut the P.T.O. shaft to length and cut key way at proper location.

CAUTION: **Be sure universal joints are in Phase (See Fig. J). Lubricate the slip yoke on installation. Tighten set screws on the other three yokes and lock with wire.**

NOTE: The next section of assembly instructions deals with the hydraulic power pack and its component parts. Be sure to clean all hydraulic parts, hoses tank, etc., before assembly and use. Keep hoses covered and other holes plugged before use.

STEP 15. Install oil tank & valve assembly onto oil tank mounting pipes. Tighten set screws.

STEP 16. Establish "Pressure" & "Inlet" ports on pump. (Will vary with direction of P.T.O. Rotation. Fig. K, IS-276)

STEP 17. Connect inlet port of the pump to gate valve on tank using 2" low pressure hose.

P.T.O. SHAFT & PUMP MOUNTING ILLUSTRATION

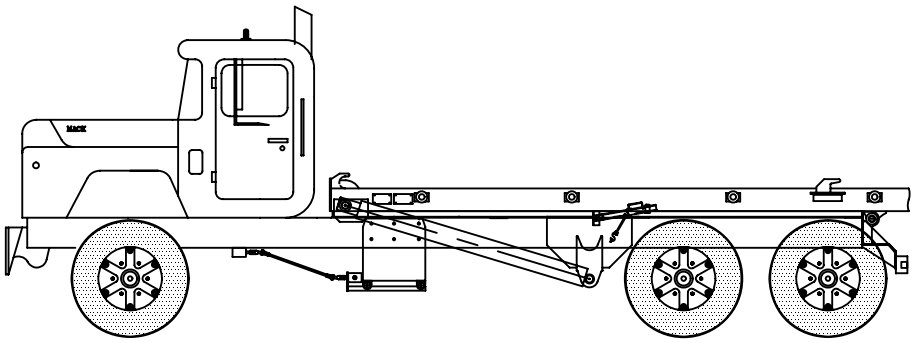
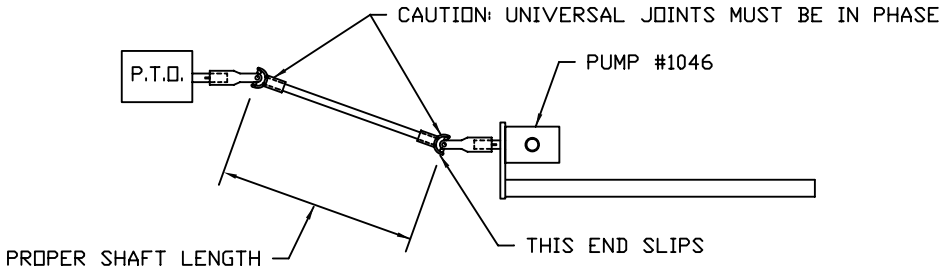
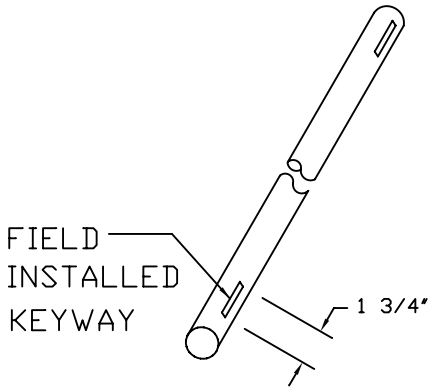


FIG. J



PROPER SHAFT LENGTH
IS THIS LENGTH LESS 3 1/2"

CAUTION: DO NOT EXCEED 36" WITHOUT
USING A CENTER CENTER SUPPORT BEARING.



NOTE: KEYWAYS MUST BE IN LINE

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HOISTS H1
P.T.O. SHAFT & PUMP MOUNTING
ILLUSTRATION

BOOK NO. 18

NO. IS0274

STEP 18. Install 1” pressure hose from valve to pressure side of pump.

STEP 19. Connect lift cylinder hoses & valve to hoist piping hoses.

STEP 20. Install rear bumper (IS0277, Fig. L). Make sure it is level and welded securely as shown (IS0277, Fig. M). Weld with five 3" welds on top and underneath the bumper where it contacts the hoist apron.

STEP 21. Install hoist props (IS0968-1).

STEP 22. Locate reflectors and lights according to State and Federal Laws. (Fig. M above is one suggested arrangement of rear lighting)

Hoist Start-Up Procedure

WARNING: DO NOT ATTEMPT TO OPERATE THE HYDRAULIC SYSTEM BEFORE FILLING WITH OIL.

STEP 23. Grease all working points on hoist. (See Lub. Charts)

STEP 24. Refer to oil capacity chart for volume suitable to hoist model (See page H:12).

STEP 25. Fill the hydraulic system with an (ISO32) AW 32 Antiware hydraulic oil filtered through the return filter.

STEP 26. Recheck clearances before raising hoist.

STEP 27. Slowly cycle all cylinders and add balance of oil required.

STEP 28. Check clearances with hoist in raised position.

STEP 29. Cycle single stage cylinders at least twice to purge air from system. Air must be bled from telescopic cylinders through bleeder screw located at the top of the cylinder tube section if cylinders have bleeder screws.

STEP 30. Set relief pressure as listed on hydraulic schematics. Nominal setting at 1850 P.S.I.

STEP 31. Set any required adjustable port relief as listed on the hydraulic schematic.

STEP 32. All hydraulic connections and components should be checked for leaks under pressure.

STEP 33. Additional mounting information can be found in the parts section of this manual such as:

Typical Hydraulic Systems
Hydraulic Schematics
Individual Components Including Mounting Notes
Optional Equipment Inserts

MINIMUM OIL REQUIRED FOR OPERATION	
MODEL	GALLONS
All Except (U-194,UX, & UT)	55
All (U-194)	70
All (UX)	60
All (UT)	65
MAXIMUM OIL TANK CAPACITY	
(ALL MODELS)	
To fill oil tank to maximum capacity, proceed thru Steps 23 thru 29. Retract cylinders and fill tank 2” from top.	

BUMPER & LIGHT INSTALLATION

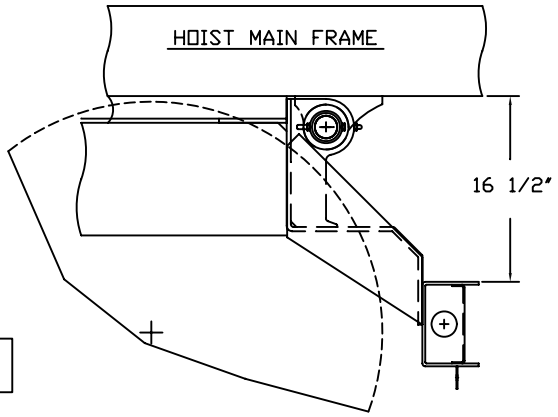

FIG. L

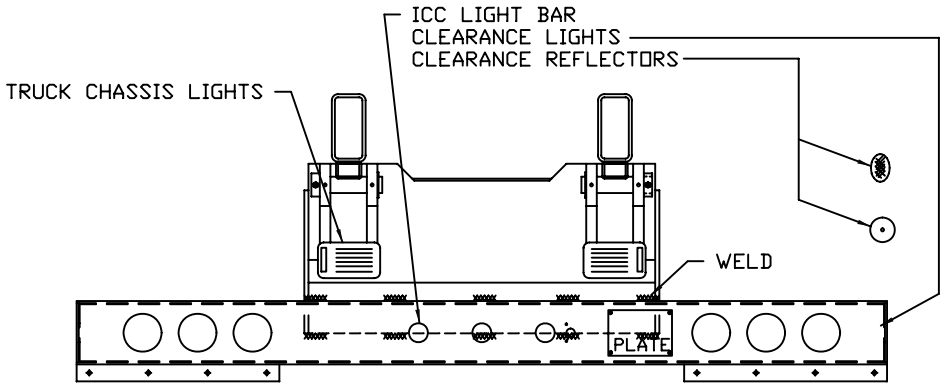

FIG. M

STEP 20. INSTALL REAR BUMPER (FIG. L). MAKE SURE IT IS LEVEL AND WELDED SECURELY AS SHOWN (FIG. M).

STEP 21. LOCATE REFLECTORS AND LIGHTS ACCORDING TO STATE AND FEDERAL LAWS. (FIG. M ABOVE IS ONE SUGGESTED ARRANGEMENT OF REAR LIGHTING.)

R1 UPDATED DRAWING

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NO.	BY
R1	GB

ECN DATE 03/23/04

REF.

DXF

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SCALE 1/15" = 1"

BY GEORGE

DATE 12/02/96

HOISTS H1

BUMPER & LIGHT INSTALLATION

BOOK NO. 18

NO. IS0277

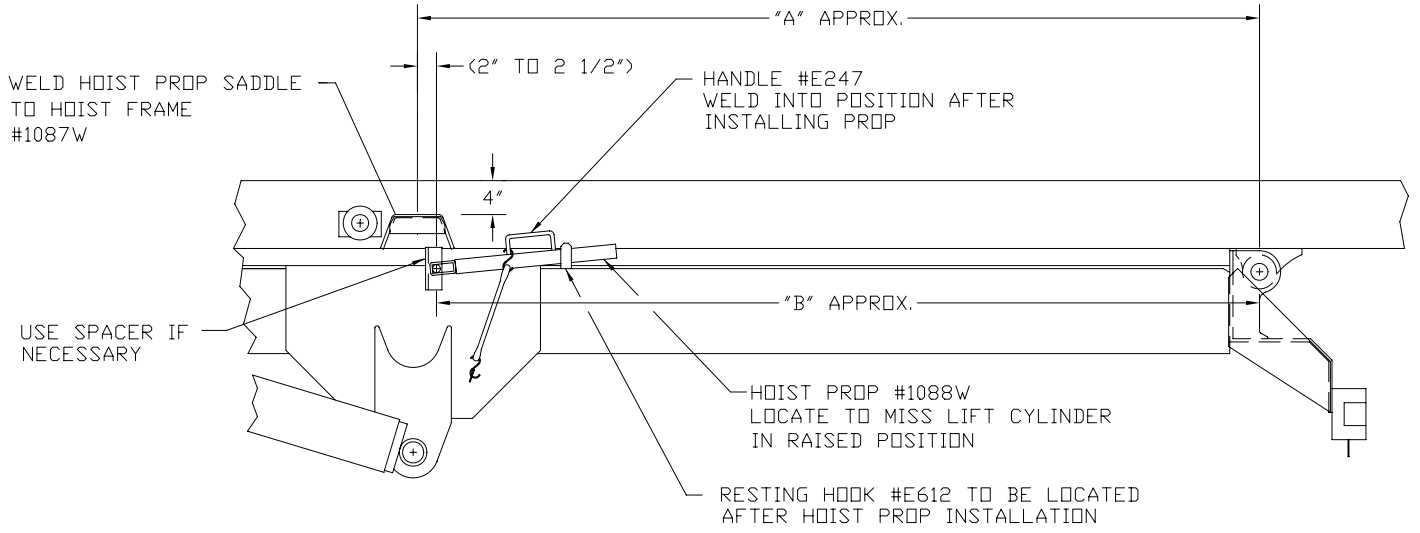
Galbreath

INCORPORATED

WINAMAC, INDIANA

HOIST MODELS

	U5-DL-174 U5-HH-174 U5-EH-174 U5-IH-174 UM-I□-194	U5-DL-156 U5-EX-156 U5-I□-156 U5-□R-156 U5-HH-156 U5-EX-174 U5-I□-174 U5-□R-174 UX-I□-178 UX-□R-178 U5-I□-182 U5-□R-182 U5-I□-186	U5-IH-156 U4-MM-156 U5-MM-174	SS-EX10-174 SS-□R10-174 SS-I□10-174 SS75-EX10-174 SS75-□R10-174 SS75-I□10-174 SS-EX10-194 SS-□R10-194 SS-I□10-194 SS75-EX10-194 SS75-□R10-194 SS75-I□10-194	UX-DL-169 UX-EX-169 UX-HH-169	U5-DL-194 U5-HH-194 UT-HH-174	U5-EX-194 U5-I□-194 U5-□R-194 UT-EX-174 UT-I□-174 UT-□R-174 UT-EX-194 UT-□R-194	U75-□R-174 U75-I□-174 U75-□R-194 U75-I□-174 WC-□R-174 WC-□R-194
DIM. "A"	92"	99 1/4"	105"	110"	118"	140"	145"	131"
DIM. "B"	90"	97"	103"	108"	116"	138"	143"	129"


"A" APPROX.
(2" TO 2 1/2")
WELD HOIST PROP SADDLE TO HOIST FRAME #1087W
HANDLE #E247 WELD INTO POSITION AFTER INSTALLING PROP
4"
"B" APPROX.
USE SPACER IF NECESSARY
HOIST PROP #1088W LOCATE TO MISS LIFT CYLINDER IN RAISED POSITION
RESTING HOOK #E612 TO BE LOCATED AFTER HOIST PROP INSTALLATION
NOTE: SOMETIMES THE FENDER IS USED PARTICULARY ON THE U-174 MODEL

R7 ADDED SS10 MODEL HOISTS
R6 ADDED U75 & WC MODEL HOISTS

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			REF. 7041A□			DXF	
10/11/01	R7	GB	Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H1 HOIST PROP MTG. INSTRUCTIONS FOR TANDEM AND 3RD AXLE	BOOK NO. 18	
08/29/01	R6	GB		SCALE 1/20" = 1"			
ECN DATE	NO.	BY		BY GEORGE		NO. IS0968	
				DATE 06-10-86			

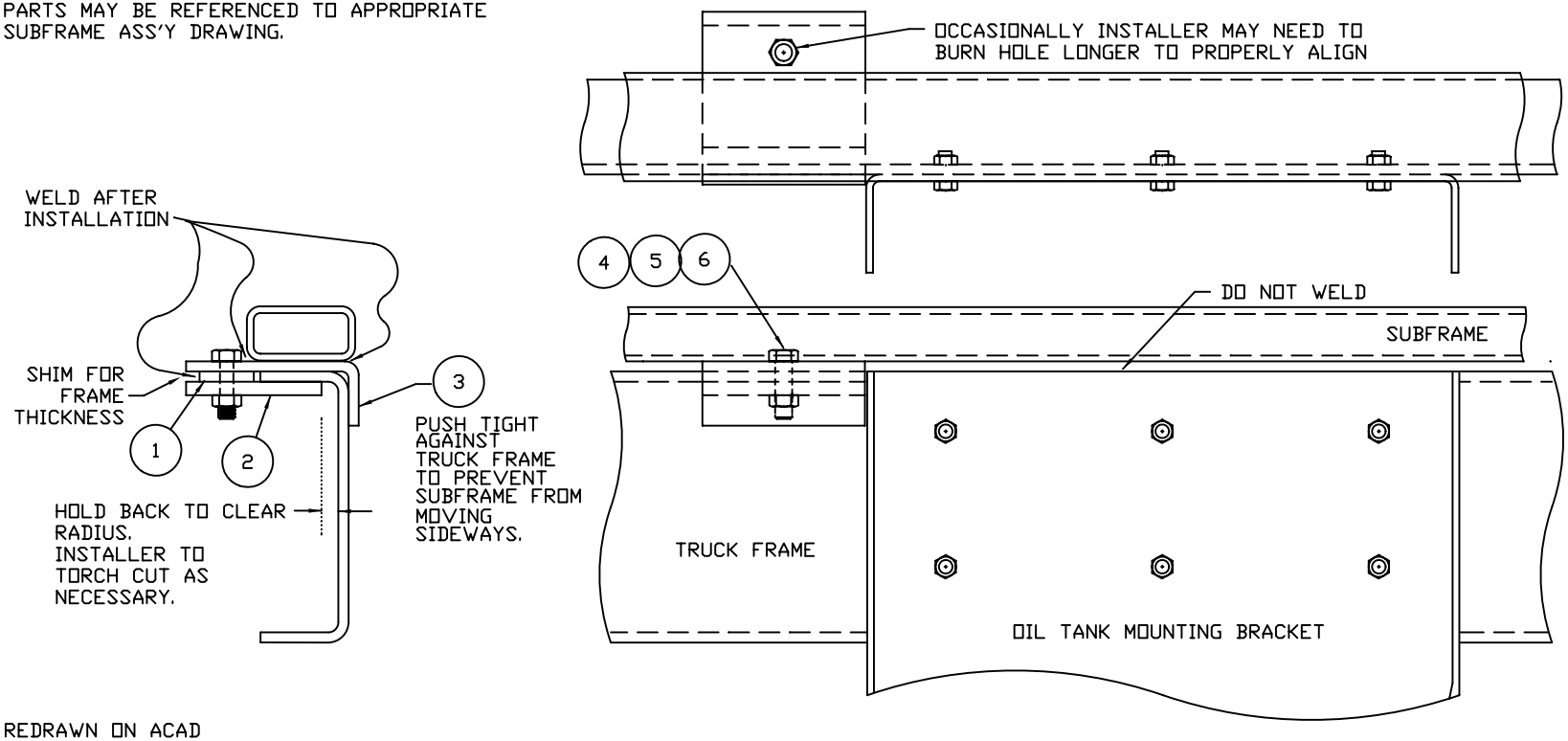
PARTS LIST (REFERENCE ONLY)

ITEM	DESCRIPTION	PART NO.	QTY.
1	SHIM	D943	2
2	CLAMP (TOP)	D941	2
3	CLAMP (BOTTOM)	D942	2
4	BOLT, 5/8-11X2 1/2	63B11G5-250	2
5	LOCKNUT, 5/8-11 G5	63LN11G5	2
6	WASHER, 5/8 G5 USS	63WG5USS	2

PARTS MAY BE REFERENCED TO APPROPRIATE SUBFRAME ASS'Y DRAWING.

NOTE:
THIS MOUNTING ARRANGEMENT IS INTENDED TO ALLOW MOVEMENT

SHIM THICKNESS REQUIREMENTS MAY VARY OTHER SHIMS ARE TO FURNISHED BY INSTALLER



R2 REDRAWN ON ACAD

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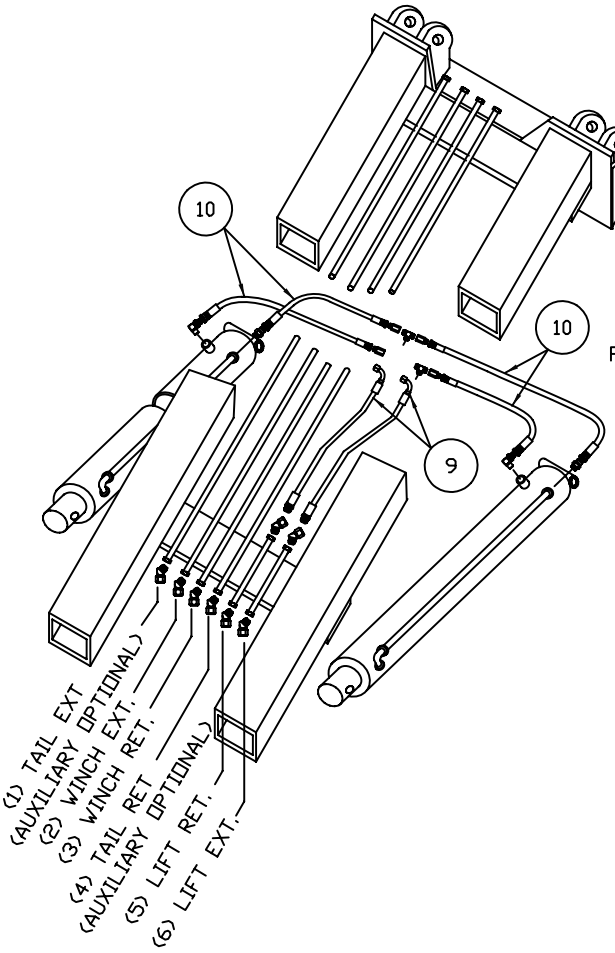
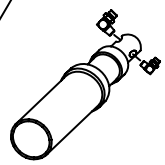
			REF.								ZK-E7
			Galbreath INCORPORATED WINAMAC, INDIANA			DO NOT SCALE DRAWING	HOISTS H FRONT MOUNTING CLAMP ROLL-OFF HOIST			BOOK NO.	18
						SCALE 1/6" = 1"					
07/12/95	R2	RBW				BY D.L.B.				NO.	IS0946
ECN DATE	NO.	BY				DATE 10/21/85					

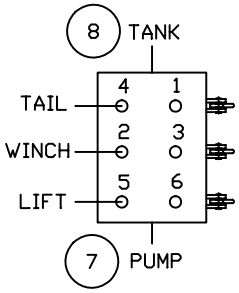
SUB-FRAME PLUMBING



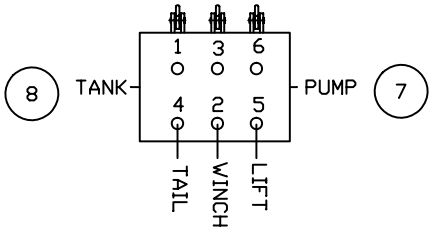


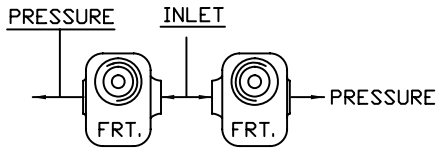
PORTS ON TELESCOPIC CYLS.

VALVE LAYOUT TOP VIEW
FOR LEVER & CABLE



VALVE LAYOUT TOP VIEW
FOR AIR CONTROLS





CT'R CLOCKWISE
PUMP ROTATION

CLOCKWISE
FIG. K

EXRENDABLE TAIL
MODELS ONLY

HOSE #	DESCRIPTION
1.	(HOSE 3/4FJ 45L 1MJ 3/4 X 50) 4816B0-50 - AUXILIARY (TAIL RET.)
2.	(HOSE 3/4FJ 45L 1MJ 3/4 X 50) 4816B0-50 - AUXILIARY (WINCH EXT.)
3.	(HOSE 3/4FJ 45L 1MJ 3/4 X 50) 4816B0-50 - WINCH EXT. (WINCH RET.)
4.	(HOSE 3/4FJ 45L 1MJ 3/4 X 50) 4816B0-50 - WINCH RET. (TAIL EXT.)
5.	(HOSE 3/4FJ 45L 1MJ 3/4 X 56) 4816B0-56 - LIFT RET. (LIFT RET.)
6.	(HOSE 3/4FJ 45L 1MJ 3/4 X 56) 4816B0-56 - LIFT EXT. (LIFT EXT.)
7.	(HOSE 1RM-RM X 56) 3393B0-56
8.	(HOSE LP 1W 1 1/4 X 48) 4099-48
9.	(HOSE 3/4FJ 90L 1MJ 3/4 X 36) 4820B0-36
10.	(HOSE 3/4JIC SF-3/4JIC SF X 36) 3431B0-36

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BY GEORGE
DATE 7/27/01

HOISTS H1
SUB FRAME PLUMBING
HYD TUBING PLUMBING

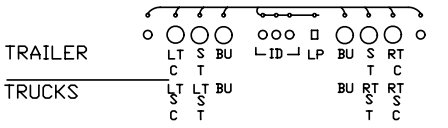
BOOK NO. 18
NO. IS5086
DXF

NO.	BY	ECN DATE

TRUCK HOIST WIRING HARNESS FOR BUMPER WITH RECESSED LIGHTS (PART # A1242)

LIGHT WIRES (SHOWN AT BOTTOM OF DRAWING)	
WHT	GROUND
BLK	BACK UP
BRN	MARKER
GRN	RIGHT TURN
YEL	LEFT TURN
RED	STOP

CONNECTION WIRES (SHOWN AT TOP OF DRAWING)	
WHITE	GROUND
BROWN	CLEARANCE/MARKER/LICENSE PLATE
YELLOW	** LEFT TURN
RED/YELLOW STRIPE	* STOP/LEFT TURN
RED/GREEN STRIPE	* STOP/RIGHT TURN
GREEN	** RIGHT TURN
R2 BLACK	BACK UP
R2 BLUE	*** AUX



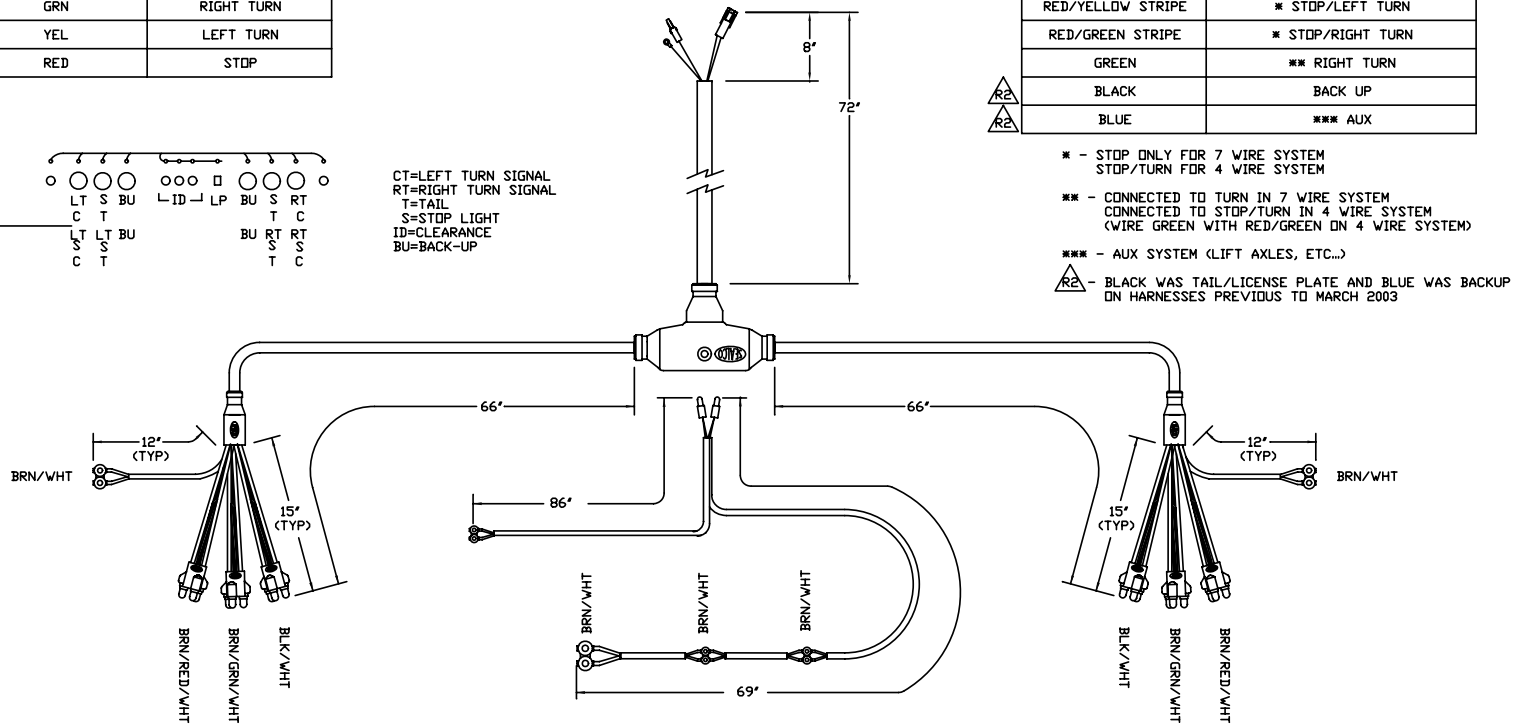
CT=LEFT TURN SIGNAL
RT=RIGHT TURN SIGNAL
T=TAIL
S=STOP LIGHT
ID=CLEARANCE
BU=BACK-UP

* - STOP ONLY FOR 7 WIRE SYSTEM
STOP/TURN FOR 4 WIRE SYSTEM

** - CONNECTED TO TURN IN 7 WIRE SYSTEM
CONNECTED TO STOP/TURN IN 4 WIRE SYSTEM
(WIRE GREEN WITH RED/GREEN ON 4 WIRE SYSTEM)

*** - AUX SYSTEM (LIFT AXLES, ETC...)

R2 - BLACK WAS TAIL/LICENSE PLATE AND BLUE WAS BACKUP ON HARNESSES PREVIOUS TO MARCH 2003



R3 UPDATED TO NEW DESIGN 4/16/04 R2 GAB

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	ECN DATE	NO.	BY
(2003 DESIGN) BLACK WAS TAIL/LICENSE PLATE AND BLUE WAS BACKUP	03/10/03	R2	JJD
BROWN WAS BLACK, BLACK WAS BROWN IN THE LEGEND AND	03/30/99	R1	JJD
THE FOUR C's WERE T's IN TRAILER & TRUCK DIAGRAM	03/30/99	R1	JJD

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WINAMAC, INDIANA

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BY GEORGE
DATE 12/03/96

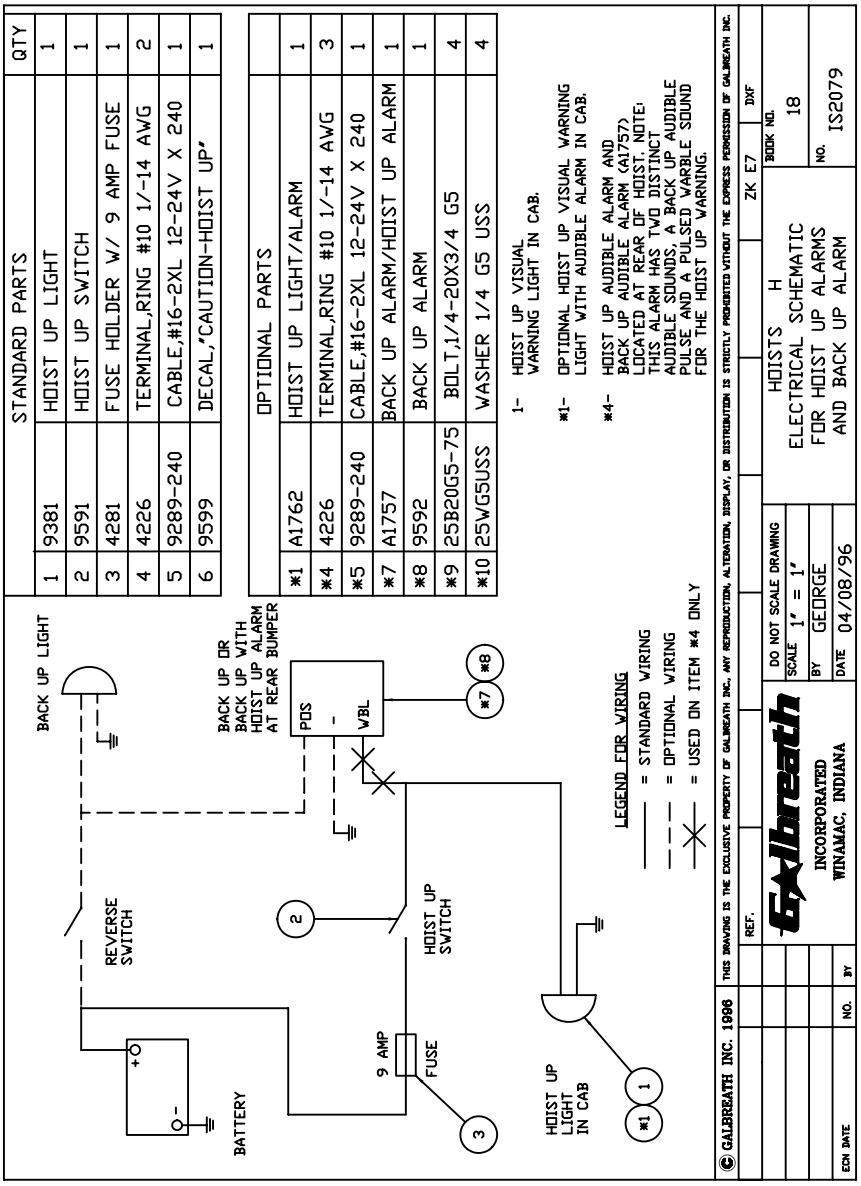
REF. A1242 IS2783_R0 DXF

HOISTS H1
WIRING HARNESS
TRUCK/TRAILER
W/ RECESSED LIGHT BUMPER

BOOK NO. 18
NO. IS2783

Hoist Up Warning Signal

As standard equipment, a visual warning light to indicate when the lift frame is elevated should be mounted in the cab. This visual warning light shall be located within the driver's scan. Galbreath Inc. does not recommend connecting this warning light to the existing back up alarm unless the back up alarm has two distinct audible sounds, one for the back up warning and one for the hoist up warning.


STANDARD PARTS
1 9381 HOIST UP LIGHT 1
2 9591 HOIST UP SWITCH 1
3 4281 FUSE HOLDER W/ 9 AMP FUSE 1
4 4226 TERMINAL,RING #10 1/-14 AWG 2
5 9289-240 CABLE,#16-2XL 12-24V X 240 1
6 9599 DECAL,"CAUTION-HOIST UP" 1
OPTIONAL PARTS
*1 A1762 HOIST UP LIGHT/ALARM 1
*4 4226 TERMINAL,RING #10 1/-14 AWG 3
*5 9289-240 CABLE,#16-2XL 12-24V X 240 1
*7 A1757 BACK UP ALARM/HOIST UP ALARM 1
*8 9592 BACK UP ALARM 1
*9 25B20G5-75 BOLT,1/4-20X3/4 G5 4
*10 25WG5USS WASHER 1/4 G5 USS 4
1- HOIST UP VISUAL WARNING LIGHT IN CAB.
*1- OPTIONAL HOIST UP VISUAL WARNING LIGHT WITH AUDIBLE ALARM IN CAB.
*4- HOIST UP AUDIBLE ALARM AND BACK UP AUDIBLE ALARM (A1757) LOCATED AT REAR OF HOIST. NOTE: THIS ALARM HAS TWO DISTINCT AUDIBLE SOUNDS, A BACK UP AUDIBLE PULSE AND A PULSED WARBLE SOUND FOR THE HOIST UP WARNING.
LEGEND FOR WIRING
= STANDARD WIRING
= OPTIONAL WIRING
= USED ON ITEM *4 ONLY
BACK UP LIGHT
REVERSE SWITCH
BACK UP OR BACK UP WITH HOIST UP ALARM AT REAR BUMPER
POS
WBL
HOIST UP SWITCH
9 AMP FUSE
BATTERY
HOIST UP LIGHT IN CAB
HOISTS H
ELECTRICAL SCHEMATIC
FOR HOIST UP ALARMS
AND BACK UP ALARM
ZK E7
DXF
BOOK NO. 18
NO. IS2079
DO NOT SCALE DRAWING
SCALE 1" = 1"
BY GEORGE
DATE 04/08/96
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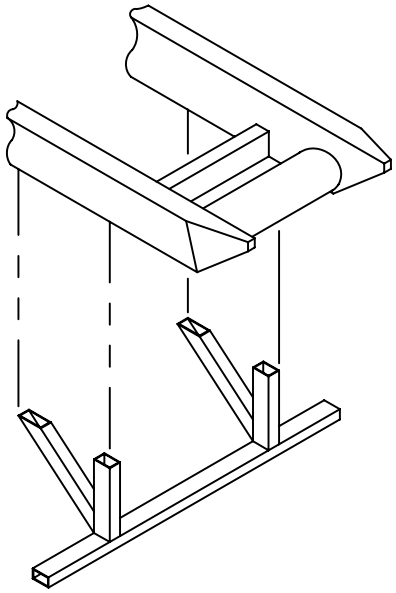
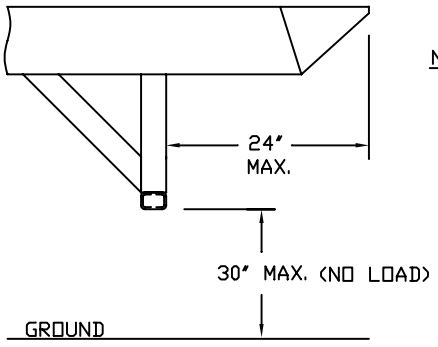
REF.
ECN DATE
NO.
BY

STANDARD ICC BUMPER PLACEMENT FOR OR & IO MODEL HOISTS



ICC BUMPER FOR OR & IO HOIST WITH FRAME HEIGHTS UNDER 44" (2120W)
ICC BUMPER FOR OR & IO HOIST WITH FRAME HEIGHTS OVER 44" (2361W)



NOTE: POSITION AND WELD ICC BUMPER IN PLACE 24" FROM REAR OF HOIST AS SHOWN.

NOTE: FOR OPTIONAL BUMPERS SEE INSERT PAGES AT THE BACK OF THE MANUAL.

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NO.	BY	ECN DATE

REF.

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WINAMAC, INDIANA

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BY GEORGE
DATE 12/04/96

HOISTS H1
ICC BUMPER PLACEMENT

DXF
BOOK NO. 18
NO. IS2782

TECHNICAL BULLETIN
SALES, SERVICE, PARTS, PRODUCTION

REF: **Hoist Conspicuity**
TO: **Sales, Service, Parts, Production**
FROM: **Engineering**
DATE: **01/17/2001**

Starting in June of 2001, we will begin putting retroreflective sheeting on our hoists in conformance with the new ANSI Z245.1-1999 standards for hoists. The new ANSI standard requires a minimum of a 2" wide white retroreflective sheeting in a "L" pattern on the upper left and upper right corners of the back of the truck cab (See Figure 16). Each leg of the white retroreflective sheeting "L" must be 12" in length (See Figure 17). In addition to the white sheeting, the standard also requires a minimum of a 1 1/2" wide red and white retroreflective sheeting to be placed the full length of the ICC bumper as viewed from the rear (See Figure 16). The last part of the retroreflective sheeting standard requires a minimum of a 2" wide red and white retroreflective sheeting along more than one half the length of the hoist sides (See Figure 16). We will use 3" wide red and white retroreflective sheeting on the sides of all of our hoists per Waste Management specifications. The side sheeting can not be blocked by a container and/or other obstructions or be placed higher than 60" from the ground. Broken strips of sheeting on the side of the hoist need to be placed as even as possible. The gaps between the broken strips of sheeting must be less than four feet in length. The edge of white or red sheeting shall not be located closer than 3 inches to the edge of the luminous lens area of any required lamp.

All sheeting must meet the requirements of ASTM D 4956-90, Standard Specification for Retroreflective Sheeting for Traffic Control, for Type V sheeting, and shall meet the minimum photometric requirements contained in the U.S. Code of Federal Regulations, 49 CFR Part 571.108. Reference ANSI Z245.1 – 1999 section 7.2.16.

See next page for Figure 16 & Figure 17

<u>Minimum Widths of Retroreflective Sheeting that can be used.</u>

1 1/2 inches (Grade DOT-C2) – **ICC Bumper Only**

2 inches (Grade DOT-C2) - 9936

3 inches (Grade DOT-C3) - 3793 (White), A2867 (Red & White)

4 inches (Grade DOT-C4)

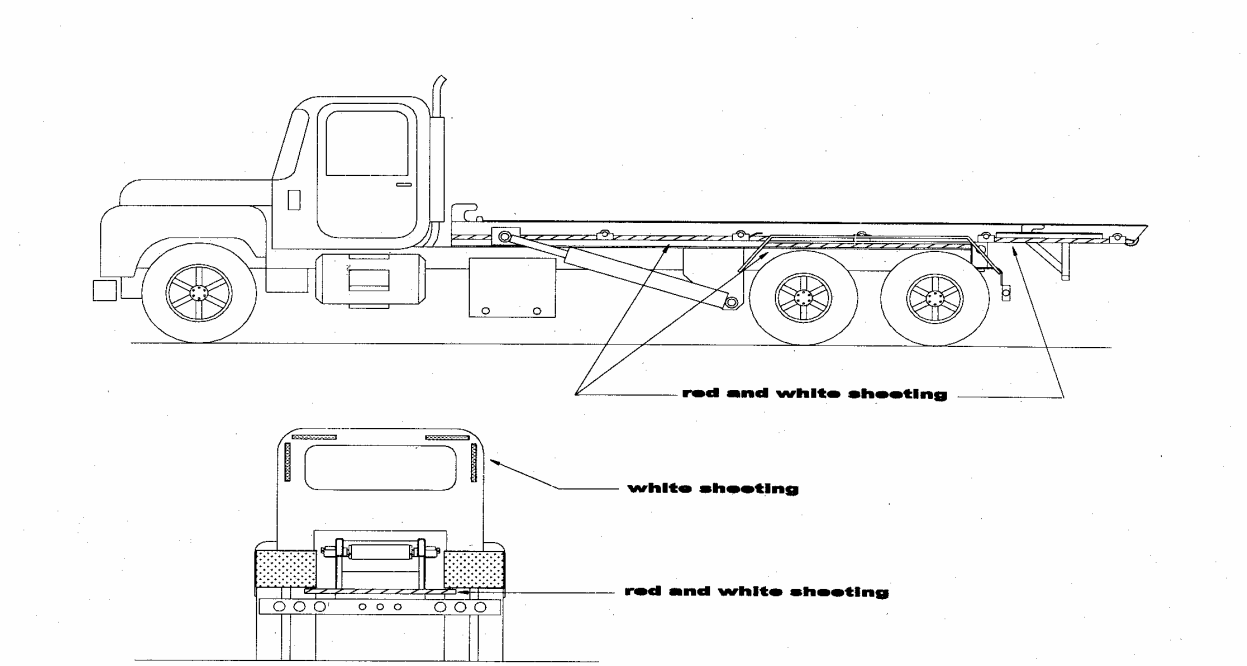


Figure 16 — Roll-off (hoist-type) vehicle markings

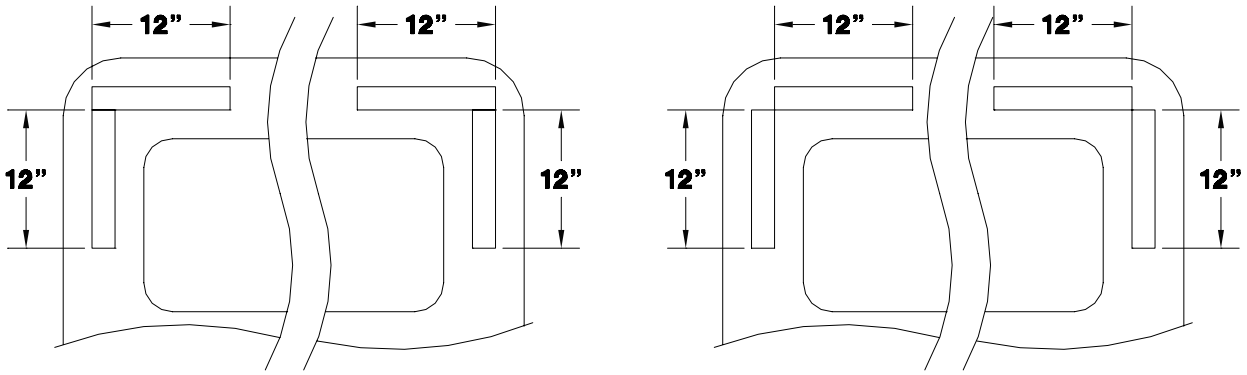
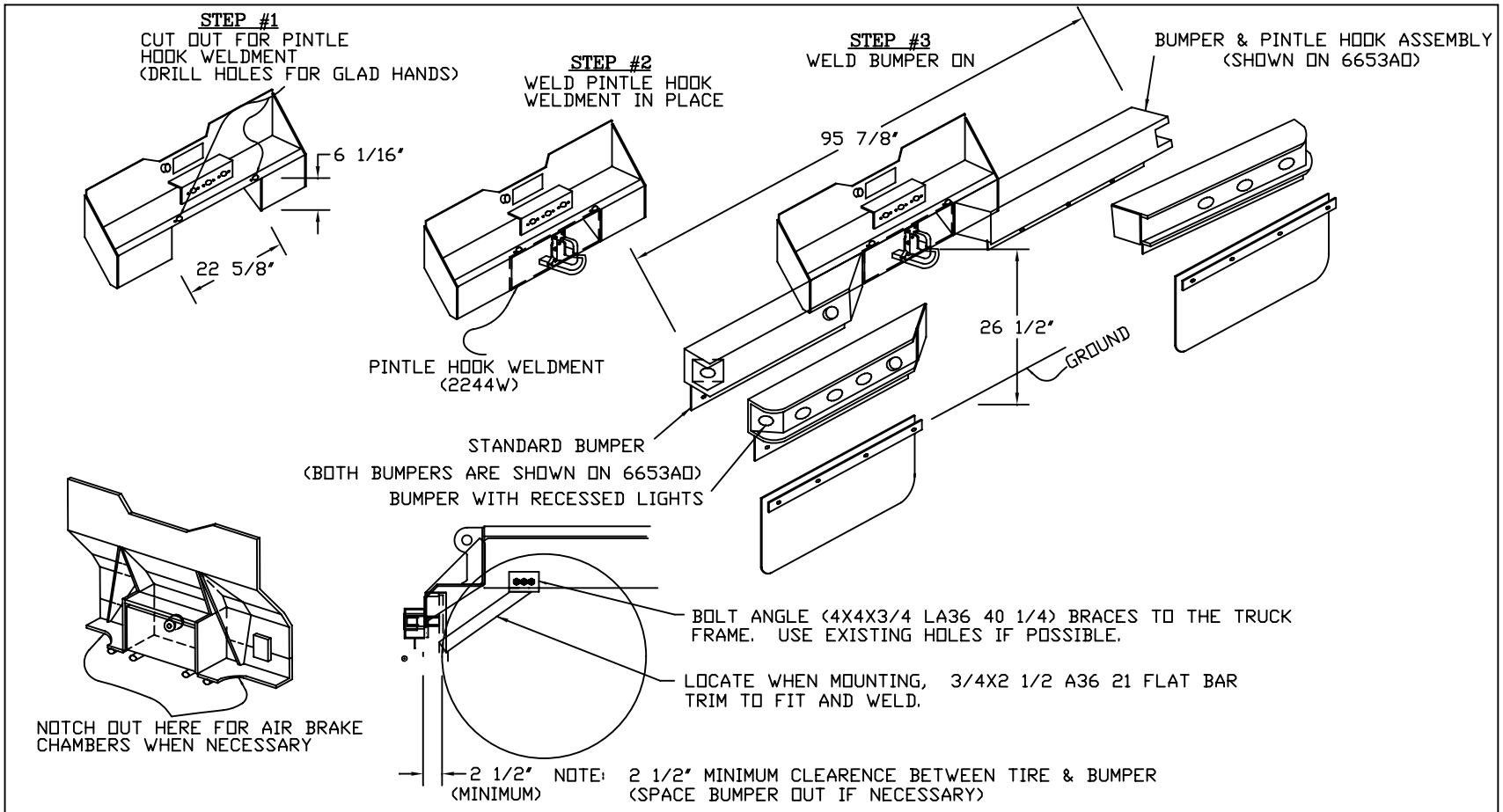


FIGURE 17


STEP #1
CUT OUT FOR PINTLE HOOK WELDMENT (DRILL HOLES FOR GLAD HANDS)
6 1/16"
22 5/8"
STEP #2
WELD PINTLE HOOK WELDMENT IN PLACE
PINTLE HOOK WELDMENT (2244W)
STEP #3
WELD BUMPER ON
95 7/8"
BUMPER & PINTLE HOOK ASSEMBLY (SHOWN ON 6653AØ)
26 1/2"
GROUND
STANDARD BUMPER
(BOTH BUMPERS ARE SHOWN ON 6653AØ)
BUMPER WITH RECESSED LIGHTS
NOTCH OUT HERE FOR AIR BRAKE CHAMBERS WHEN NECESSARY
BOLT ANGLE (4X4X3/4 LA36 40 1/4) BRACES TO THE TRUCK FRAME. USE EXISTING HOLES IF POSSIBLE.
LOCATE WHEN MOUNTING, 3/4X2 1/2 A36 21 FLAT BAR TRIM TO FIT AND WELD.
2 1/2" (MINIMUM)
NOTE: 2 1/2" MINIMUM CLEARENCE BETWEEN TIRE & BUMPER (SPACE BUMPER OUT IF NECESSARY)

R5 8/9/99 GAB CHANGED BRACE TO TRUCK FRAME WAS J539
R4- REDREW TO ACAD. CORRECTED ASSEMBLY NUMBERS CALLED OUT (6654AØ WAS OBSOLETE).
R3- UPDATE CHANGE ON BRACE BEHIND PINTLE HOOK
R2- UPDATE BRACE BEHIND PINTLE HOOK
R1- CHANGED VIEW TO REFLECT WINGS

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03/18/96	R4	PUGH	REF. 6653AØ	6654AØ	1262BØ					DXF
06/18/90	R3	CWM								
03/19/90	R2	CK								
11/04/88	R1	CWM								
ECN DATE	NO.	BY								

Galbreath
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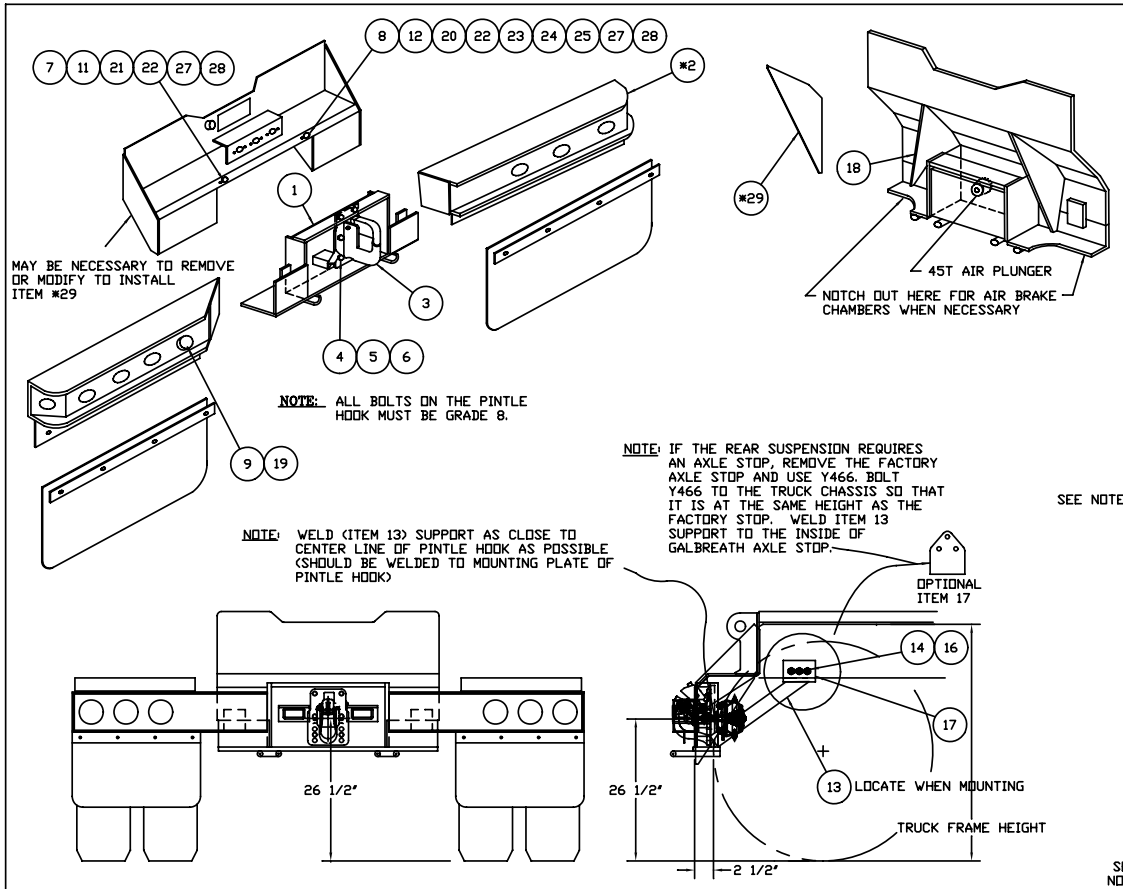
WINAMAC, INDIANA

DO NOT SCALE DRAWING	
SCALE	NONE
BY	CWM
DATE	02/27/87

HOISTS H
INSTALLATION OF BUMPER AND PINTLE HOOK

BOOK NO.	12
NO.	IS1040


7 11 21 22 27 28
8 12 20 22 23 24 25 27 28
*2
1
3
4 5 6
MAY BE NECESSARY TO REMOVE OR MODIFY TO INSTALL ITEM *29
9 19
NOTE: ALL BOLTS ON THE PINTLE HOOK MUST BE GRADE 8.
*29
18
45T AIR PLUNGER
NOTCH OUT HERE FOR AIR BRAKE CHAMBERS WHEN NECESSARY
NOTE: IF THE REAR SUSPENSION REQUIRES AN AXLE STOP, REMOVE THE FACTORY AXLE STOP AND USE Y466. BOLT Y466 TO THE TRUCK CHASSIS SO THAT IT IS AT THE SAME HEIGHT AS THE FACTORY STOP. WELD ITEM 13 SUPPORT TO THE INSIDE OF GALBREATH AXLE STOP.
NOTE: WELD (ITEM 13) SUPPORT AS CLOSE TO CENTER LINE OF PINTLE HOOK AS POSSIBLE (SHOULD BE WELDED TO MOUNTING PLATE OF PINTLE HOOK)
OPTIONAL ITEM 17
14 16
17
13 LOCATE WHEN MOUNTING
26 1/2"
26 1/2"
TRUCK FRAME HEIGHT
2 1/2"

NO.	DESCRIPTION	PART NO.	QTY	WT
1	PINTLE HOOK WELDMENT	2244W	1	-
*2	BUMPER, STANDARD	6734A0	1	-
3	PINTLE HOOK	4874	1	-
4	BOLT, 3/4-10X2 1/2 G8	75B10G8-250	6	-
5	LOCKNUT, 3/4-10 G8	75LN10G8	6	-
6	WASHER, 3/4 G5 USS	75WG5USS	6	-
7	GLADHANDS W/SHUT-OFF SERVICE	4875	1	-
8	GLADHANDS W/SHUT-OFF/EMERGENCY	4876	1	-
9	ELECTRIC SOCKET, 7 POLE	8861	1	-
10	AIR SYSTEM	6733A0	1	-
11	DECAL "SERVICE"	8449	1	-
12	DECAL "EMERGENCY"	8450	1	-
13	3/4X2 1/2 A36 21	75A36-25-21	2	-
14	BOLT, 3/4-10X3 G8	75B10G8-300	6	-
15				-
16	LOCKNUT, 3/4-10 G8	75LN10G8	6	-
17	MOUNTING BRACKET	AB799	2	18.50
18	BRACE, SUB FRAME	B668	2	-
19	BOOT, ELECTRIC SOCKET	9220	1	-
20	BRSS SERV T, 3/8MP - 3/8 FP - 3/8FP	5931	1	-
21	BRSS CONN, 1/2 CT - 3/8 FP	7300	1	-
22	BRSS LG NIP, 3/8 MP - 2	6036	2	-
23	BRSS CONN 3/8 CT- 3/8 FP	6152	1	-
24	BRSS FIT, 90L, 1/4 CT - 3/8 MP	A2395	1	-
25	BRSS FIT, 45L, 3/8FP - 3/8 MP	6060	1	-
26				-
27	BOLT, 5/16-18X1 1/4 G5	31B18G5-125	4	-
28	LOCKNUT, 5/16-18 G5	31LN18G5	4	-

SEE NOTE -

SEE NOTE:

*2	BUMPER, RECESSED LIGHTS	6734A0	1	-
*17	AXLE STOP/PINTLE HOOK BRACE	Y466	2	-
*29	BRACE SUB FRAME (FOR SI HOIST)	B668	2	-

NOTE: CLEARENCE BETWEEN TIRE & BUMPER MINIMUM 2 1/2" (SPACE BUMPER OUT IF NECESSARY)

NOTE: ITEM 18 B668 REPLACES 567 (INSIDE GUSSET) ON ALL SUBFRAMES WHEN INATALLING PINTLE HOOK IS1040 ARE THE INSTALLATION INSTRUCTIONS

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REF. 6653A0 DXF

	ECN DATE	NO.	BY
R3 ITEM 26 WAS P874	05/25/01	R3	GB
R2 ITEM 17 WAS 75LA3640406	12/17/99	R2	GB
R1 ITEM 13 WAS J539, 15 WAS 75B10G5-250, ITEM 16 WAS QTY 10	08/09/99	R1	GB

GALBREATH INCORPORATED WINAMAC, INDIANA

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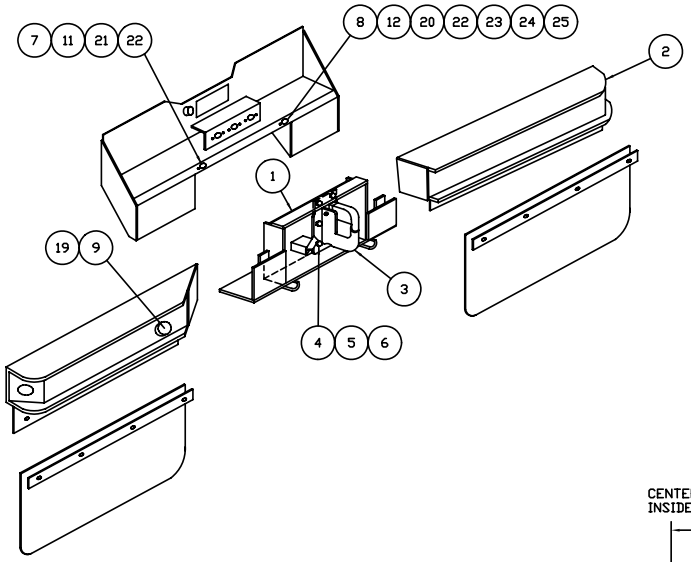
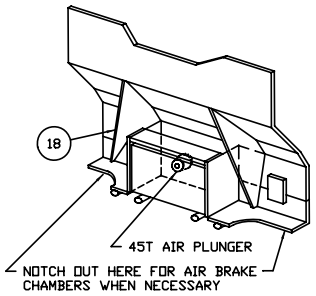
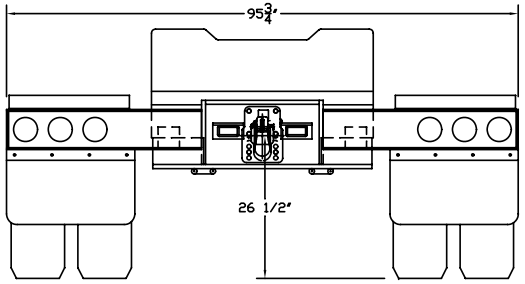
SCALE 1/20" = 1"
BY GEORGE
DATE 5/13/99

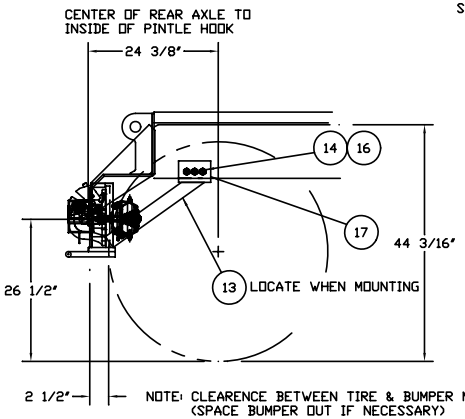
HOISTS H1
BUMPER & PINTLE HOOK ASSEMBLY
TANDEM AXLE HOISTS
(WITH & WITHOUT AXLE STOPS)

BOOK NO. 18
NO. IS4126









SEE NOTE -

NO.	DESCRIPTION	PART NO.	QTY	WT
1	PINTLE HOOK WELDMENT	2244W	1	-
2	BUMPER	6735AD	1	-
3	PINTLE HOOK	4874	1	-
4	BOLT, 3/4-10X2 1/2 G8	75B10G8-250	6	-
5	LOCKNUT, 3/4-10 G8	75LN10G8	6	-
6	WASHER, 3/4 G5 USS	75WG5USS	6	-
7	GLADHANDS W/SHUT-OFF SERVICE	4875	1	-
8	GLADHANDS W/SHUT-OFF/EMERGENCY	4876	1	-
9	ELEC SOCKET, 7 POLE	8861	1	-
10	AIR SYSTEM	6733AD	1	-
11	DECAL "SERVICE"	8449	1	-
12	DECAL "EMERGENCY"	8450	1	-
13	3/4X2 1/2 A36 21	75A36-25-21	2	-
14	BOLT, 3/4-10X3 G8	75B10G8-300	6	-
15				-
16	LOCKNUT, 3/4-10 G8	75LN10G8	6	-
17	MOUNTING BRKT	AB799	2	-
18	SUB FRAME BRACE	B668	2	-
19	BOOT, ELEC SOCKET	9220	1	-
20	BRSS T, 3/8 NPT FEM	BT06PF	1	-
21	BRSS ADP, 3/8 NPT M X 1/8 NPT FEM	BADP06PM02PF	1	-
22	BRSS NIP HEX, 3/8 NPT	BNIPHX06P	2	-
23	BRSS ADP, 5/16 COMP FEM	BADP05CF	1	-
24	BRSS ADP, 1/4 COMP FEM X 1/8 NPT M	BADP04CF02PM	1	-
25	BRSS ADP, 1/2 COMP FEM X 3/8 NPT M	BADP08CF06PM	1	-
26				-

NOTE: ITEM 21 B668 REPLACES 567 (INSIDE GUSSET)
ON ALL SUBFRAMES WHEN INATALLING PINTLE HOOK

IS1040 IS INSTALLATON INSTRUCTIONS

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REF. 6654AD

DXF

	ECN DATE	NO.	BY
R3 ITEM 26 WAS P874	05/25/01	R3	GB
R2 ITEM 17 WAS 75LA3640406	12/17/99	R2	GB
R1 ITEM 13 WAS J539, 15 WAS 75B10G5-250, 16 WAS QTY 10	08/09/99	R1	GB

Galbreath
INCORPORATED
WINAMAC, INDIANA

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BY GEORGE
DATE 5/13/99

HOISTS H
BUMPER & PINTLE HOOK ASS'Y
HOISTS
FOR TANDEM AXLE

BOOK NO. 18
NO. IS4127

ITEM	DESCRIPTION
1	COMPRESSOR, AIR
2	GOVERNOR, AIR COMPRESSOR
3	SWITCH, LOW PRESSURE
4	GAGE, AIR
5	RESERVOIR, SUPPLY
6	COCK, DRAIN
7	VALVE, CHECK
8	RESERVOIR, SECONDARY
9	RESERVOIR, PRIMARY
10	VALVE, TWO-WAY CHECK
11	* VALVE, RELAY
12	VALVE, MODULATOR
13	VALVE, SPRING BRAKE CONTROL
14	VALVE, INVERSION
15	SWITCH, STOPLIGHT

ITEM	DESCRIPTION
16	VALVE, BRAKE
17	VALVE, QUICK RELEASE
18	VALVE, SAFETY
19	VALVE, TRACTOR & TRAILER AIR SUPPLY
20	VALVE, TRACTOR PROTECTION
21	VALVE, HAND CONTROL
22	KNOB WITH PIN FOR 4430 VALVE ITEM 19

* SOME VEHICLES MAY HAVE A QUICK RELEASE VALVE IN PARKING BRAKE SYSTEM.

PRIMARY SERVICE SYSTEM

SECONDARY SERVICE SYSTEM

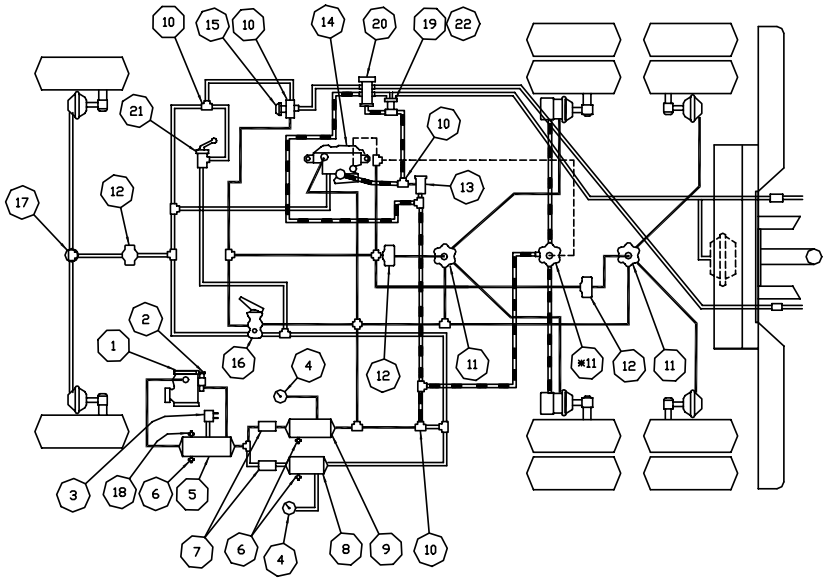
PARKING BRAKE SYSTEM

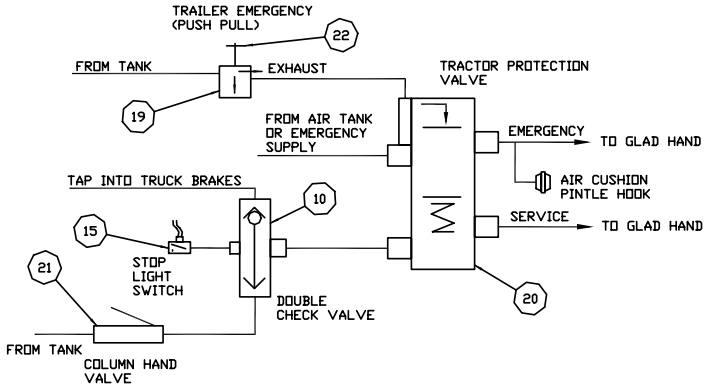
SECONDARY & PARKING SYSTEM

NO.	DESCRIPTION	PART NO.	QTY	WT	
10	VALVE, DOUBLE CHECK	8332	1		-
15	SWITCH, STOP LIGHT	8331	1		-
19	VALVE, TRAC & TRL AIR SUPPLY	4430	1		-
20	VALVE, TRACTOR PROTECTION	8330	1	1	-
21	VALVE, COLUMN HAND	8334	1		-
22	KNOB W/PIN FOR 4430 VALVE	4431	1		-

6 X 4 TRUCK BRAKE SYSTEM W/ TRAILER PROVISIONS

MT-20841A





NOTE:
PLASTIC LINE & FERRULE FITTINGS TO BE SUPPLIED BY CUSTOMER AS REQUIRED PER TRUCK.

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DXF

ECN DATE	NO.	BY

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WINAMAC, INDIANA

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BY GEORGE

DATE 2/3/00

HOISTS H
AIR SYSTEM
TRUCK HOIST WITH PINTLE HOOK
(6733A0)

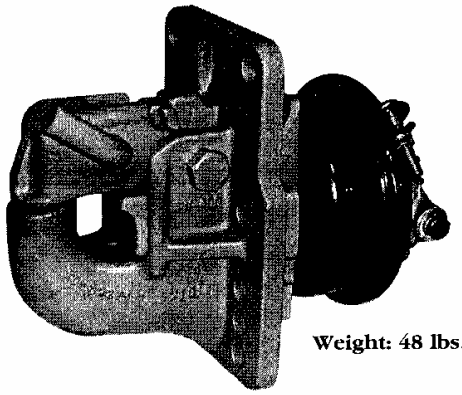
BOOK NO. 18

NO. IS4450

Holland

GO THE DISTANCE.

PH-400 SPECIFICATIONS



Weight: 48 lbs.

Holland

Rigid type pintle hook with air operated plunger. Air operated plunger provides a minimum clearance and some shock absorption at the coupling.

18,000 lbs. Maximum Vertical Load
90,000 lbs. Maximum Gross Trailer Weight
(120,000 lbs. Tensile)

SAE J847 Information:
Type I - not applicable. Type II - 90,000 lbs.

IMPORTANT SAFETY INFORMATION:

Maintain adequate vertical (tongue) load to properly control the trailer (generally 10%) but do not exceed the above rated capacities.

DO NOT damage the latch. Be particularly careful with the drawbar when coupling and uncoupling.

Other steps and inspections are also required. Consult OSHA and D.O.T. regulations and American Trucking Association for complete coupling and uncoupling procedures. These cover items such as cargo securement, brakes, lights, safety chains, and other important requirements.

This equipment must not be used or maintained in a careless manner.

GENERAL INFORMATION:

1. Do not modify or add to the product.
2. Wear safety goggles during installation, removal and servicing.
3. Never strike any part of the item with a steel hammer.
4. Do not weld on this product.

This product is covered by Holland's Commercial Products Warranty. Holland reserves the right, without giving prior notice, to change specifications and dimensions as designs are altered or improved.

TOWING APPLICATIONS:

Trailers, full trailers, doubles, and triples operations within the stated capacities. For off-road applications, reduce the above capacities by 25% and use in conjunction with a swivel type drawbar.

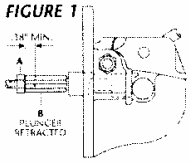
DRAWBAR EYE DIMENSIONS:

2.44˝ to 3˝ I.D. with 1.25˝ to 1.63˝ diameter section.

MOUNTING:

1. Use a mounting structure of sufficient strength to support the rated capacity of the pintle hook in accordance with SAE J849 and SAE J847, respectively.
2. Use the hole pattern described on the reverse.
3. Use (8) .75˝ grade 8 fasteners, properly tightened. The recommended minimum torque is 200 ft-lbs., per SAE J429.

FIGURE 1



4. A Holland XB-165945 air cylinder is recommended for use with Holland pintle hooks.
5. Adjustment of Holland's air activated plunger: The Holland XB-165945 air cylinder is preset for mounting structure thickness up to 1.0˝ with a 1.62˝ diameter drawbar section. If your mounting structure is different, adjust the plunger as follows:
   A. Loosen cylinder rod jam nut (A) as shown in ***FIGURE 1***.
   B. Turn the plunger rod (B) out (counterclockwise) a distance equal to the difference between your mounting structure thickness and 1˝.

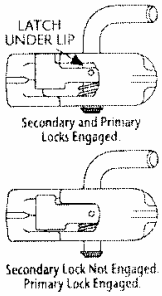


FIGURE 2

   NOTE: Be sure the cylinder rod and plunger rod have .38˝ minimum thread engagement. *(Factory set engagement is approximately 1.38˝)*
   C. Retighten cylinder rod jam nut (A) securely.
6. Mount the air cylinder and plunger assembly, making sure that the air cylinder and plunger assembly are in line with the pintle body. Adjust as required and tighten the air cylinder bolts securely.
7. Connect the air supply and check for proper operation.
8. Check the plunger adjustment. When properly adjusted, the plunger should tightly grip a 1.25˝ round bar (or plunger adjustment tool TF-03147) when energized (see ***FIGURE 1***) and retract far enough when de-energized to allow easy removal of the drawbar.

OPERATING INSTRUCTIONS:

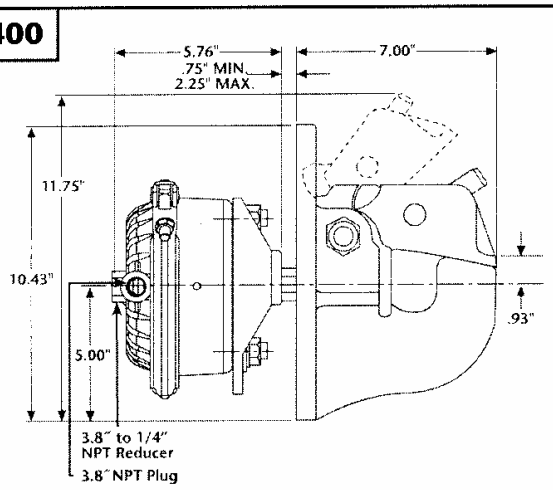
1. Deactivate the plunger by removing air preasure. Check to see that the plunger (XA-04156) is retracted.
2. Before using the pintle hook, inspect for proper operation; worn, damaged, or missing parts; and a secure mounting. Correct as required for use.
3. Open the latch (XA-02536) by pushing the handle (XA-01534-1) to the left and rotating it down. While keeping the handle rotated down, lift the latch open.
4. Position the drawbar eye over the horn of the pintle and lower it into place.
5. Push the latch closed. Verify that the primary and secondary locks engage. See ***FIGURE 2.***
6. Extend plunger by applying air pressure.

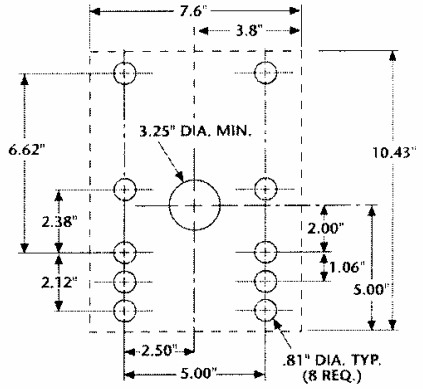
MAINTENANCE:

For proper performance, the following maintenance steps should be performed every 30,000 miles or 3 months, whichever comes first.

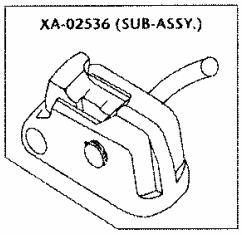
1. Clean and check for proper operation. Inspect for worn, damaged or missing parts. Replace as required using only Holland parts.
2. Inspect, in particular, the coupling contact area. Replace when wear exceeds 1/8˝ (0.125˝) from the original surface profile.
3. Lubricate latch pivots with a light oil lubricant.
4. Check mounting fasteners for proper torque.
5. Check plunger adjustment. See Item 8 of "Mounting Instructions", described previously.

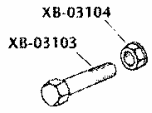
PH-400

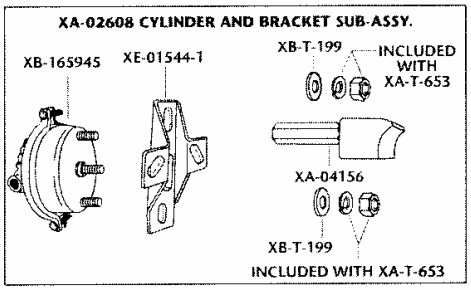


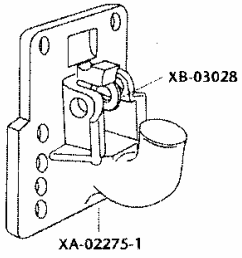


ALL DIMENSIONS SHOWN ARE NOMINAL









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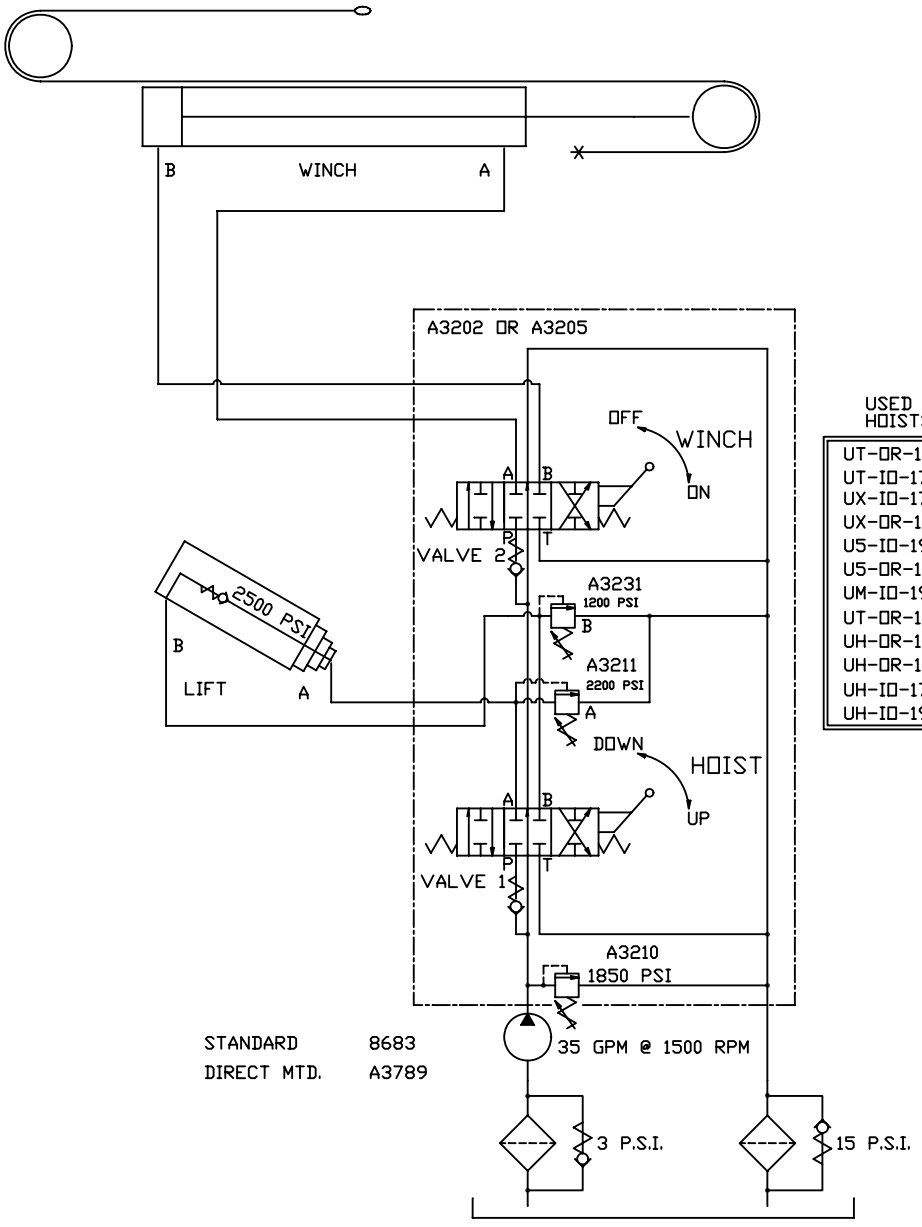
BOOK NO.	42
DRAWING NO.	HS0069
DATE	04/08/88
DRAWN BY	GAB
REVISION	R7

HYDRAULIC CIRCUIT SCHEMATIC FOR ROLL-OFF TRUCK HOIST
SEE APPLICATION CHART.



USED ON HOISTS	LIFT CYL	WINCH CYL
UT-OR-174	A3383	A3147
UT-IO-174	A3383	A3147
UX-IO-178	A3381	A3147
UX-OR-178	A3381	A3147
U5-IO-194	A3377	A3149
U5-OR-194	A3377	A3149
UM-IO-194	A3377	A3149
UT-OR-194	A3383	A3149
UH-OR-174	A3383	A3147
UH-OR-194	A3383	A3149
UH-IO-174	A3383	A3147
UH-IO-194	A3383	A3149

REMARKS: R1- ADDED CYLINDER CHARTS
R2- A2084 WAS A1245
R3- 3/2/00 GB REMOVED SINGLE AXLE AND UPDATED PART NO'S
R4- 5/25/01 GB A3231 WAS A3211
R5- 9/21/01 GB ADDED U75-OR/IO-194
R6- 8/1/02 GB DIRECT MOUNT PUMP WAS A1001
R7- 8/16/04 GB FLIPPED A3211 & A3231

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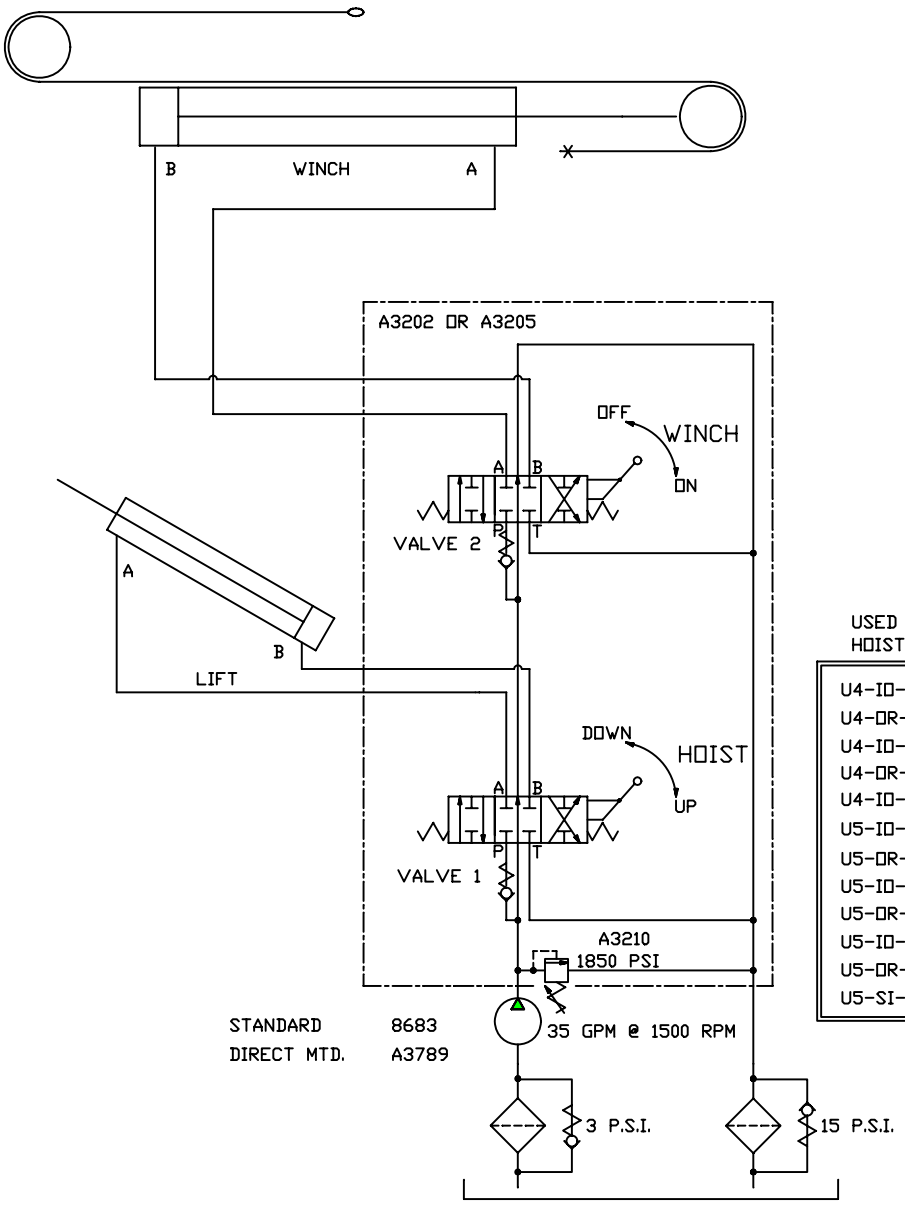
BOOK NO.	42
DRAWING NO.	HS0070
DATE	04/08/88
DRAWN BY	GAB
REVISION	R3

HYDRAULIC CIRCUIT SCHEMATIC FOR ROLL-OFF TRUCK HOIST
SEE APPLICATION CHART.



USED ON HOIST	LIFT CYL.	WINCH CYL.
U4-ID-156	A3137	A3117
U4-OR-156	A3137	A3117
U4-ID-174	A3137	A3119
U4-OR-174	A3137	A3119
U4-ID-182	A3137	A3119
U5-ID-156	A3137	A3145
U5-OR-156	A3137	A3145
U5-ID-174	A3137	A3147
U5-OR-174	A3137	A3147
U5-ID-182	A3137	A3147
U5-OR-182	A3137	A3147
U5-SI-186	A3137	A3147

REMARKS:
R1- ADDED CYLINDER CHARTS
R2- 3/2/00 GB REMOVED SINGLE AXLE HOISTS
R3- 8/1/02- GB- DIRECT MOUNT PUMP WAS A1001

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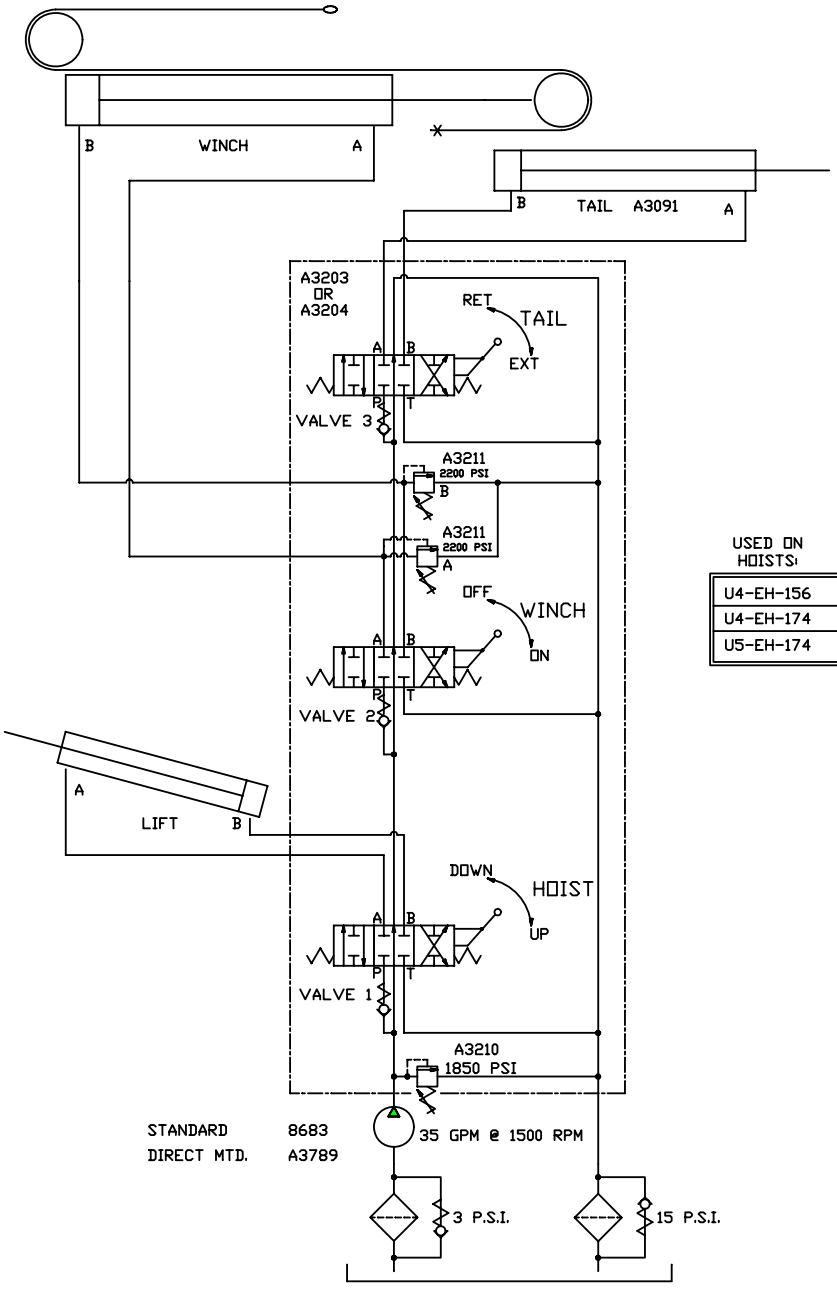
BOOK NO.	42
DRAWING NO.	HS0071
DATE	04/11/88
DRAWN BY	GAB
REVISION	R4

HYDRAULIC CIRCUIT SCHEMATIC FOR ROLL-OFF TRUCK HOIST
SEE APPLICATION CHART.



USED ON HOISTS:	LIFT CYLINDER:	WINCH CYLINDER:
U4-EH-156	A3383	A3117
U4-EH-174	A3383	A3119
U5-EH-174	A3383	A3147

REMARKS:
R1- ADDED CYLINDER CHARTS
R2- A2084 WAS A1245 AND 4870 WAS 4869
R3- 03/02/00 - JJD - UPDATED PART NUMBERS
R4- 8/1/01- GB- DIRECT MOUNT WAS A1001

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WINAMAC, INDIANA

BOOK NO.	42
DRAWING NO.	HS0072
DATE	04/11/88
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REVISION	R6

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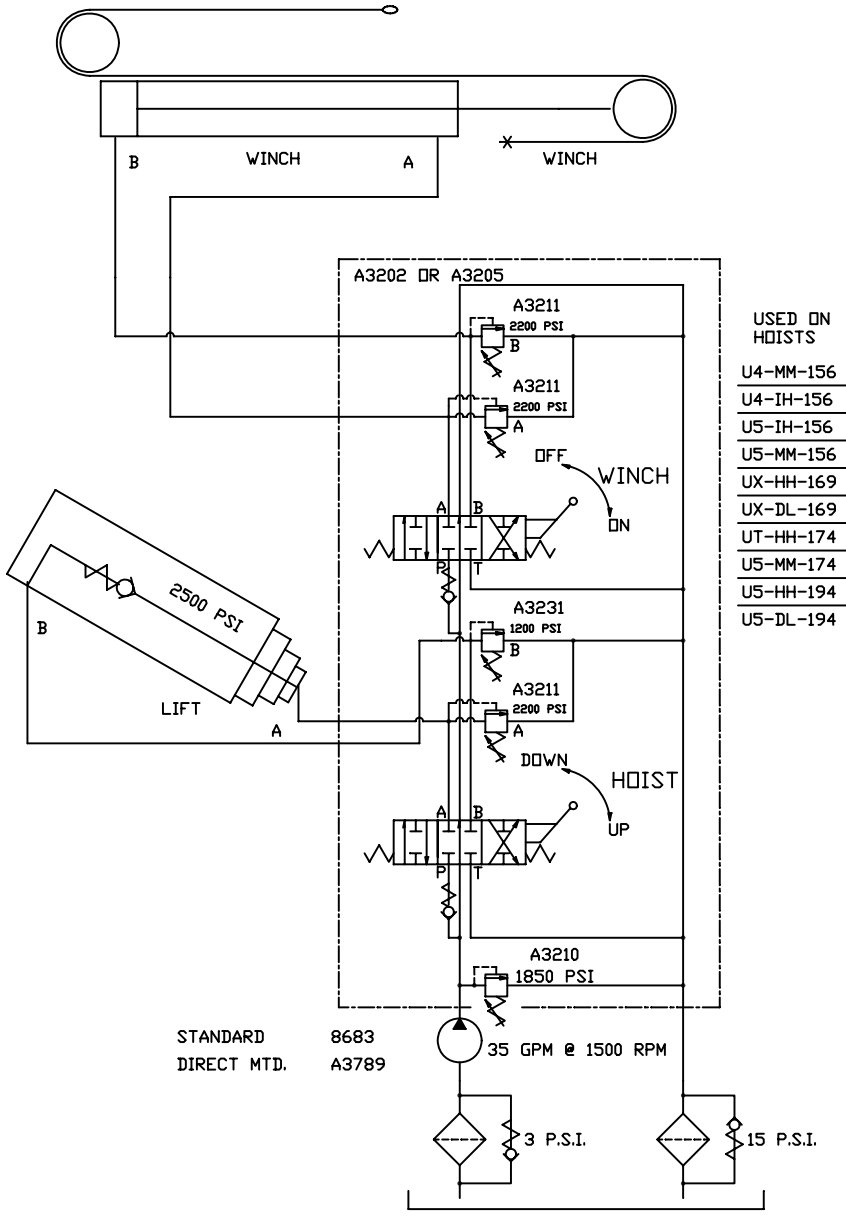
HYDRAULIC CIRCUIT SCHEMATIC FOR ROLL-OFF TRUCK HOIST
SEE APPLICATION CHART.



USED ON HOISTS	LIFT CYL	WINCH CYL
U4-MM-156	A3381	A3117
U4-IH-156	A3381	A3117
U5-IH-156	A3381	A3145
U5-MM-156	A3381	A3145
UX-HH-169	A3381	A3147
UX-DL-169	A3381	A3147
UT-HH-174	A3383	A3147
U5-MM-174	A3381	A3147
U5-HH-194	A3377	A3147
U5-DL-194	A3377	A3147

REMARKS:
R1- ADDED CYLINDER CHARTS
R2- A2084 WAS A1245 ADDED 4869
R3- 3/2/00 GB UPDATED PART NO'S
R4- 5/25/01 GB A3231 WAS A3211
R5- 8/1/02 GB DIRECT MOUNT WAS A1001
R6- 8/16/04 GB FLIPPED A3211 & A3231

INCORPORATED
WINAMAC, INDIANA

BOOK NO.	42
DRAWING NO.	HS0073
DATE	04/11/88
DRAWN BY	GAB
REVISION	R4

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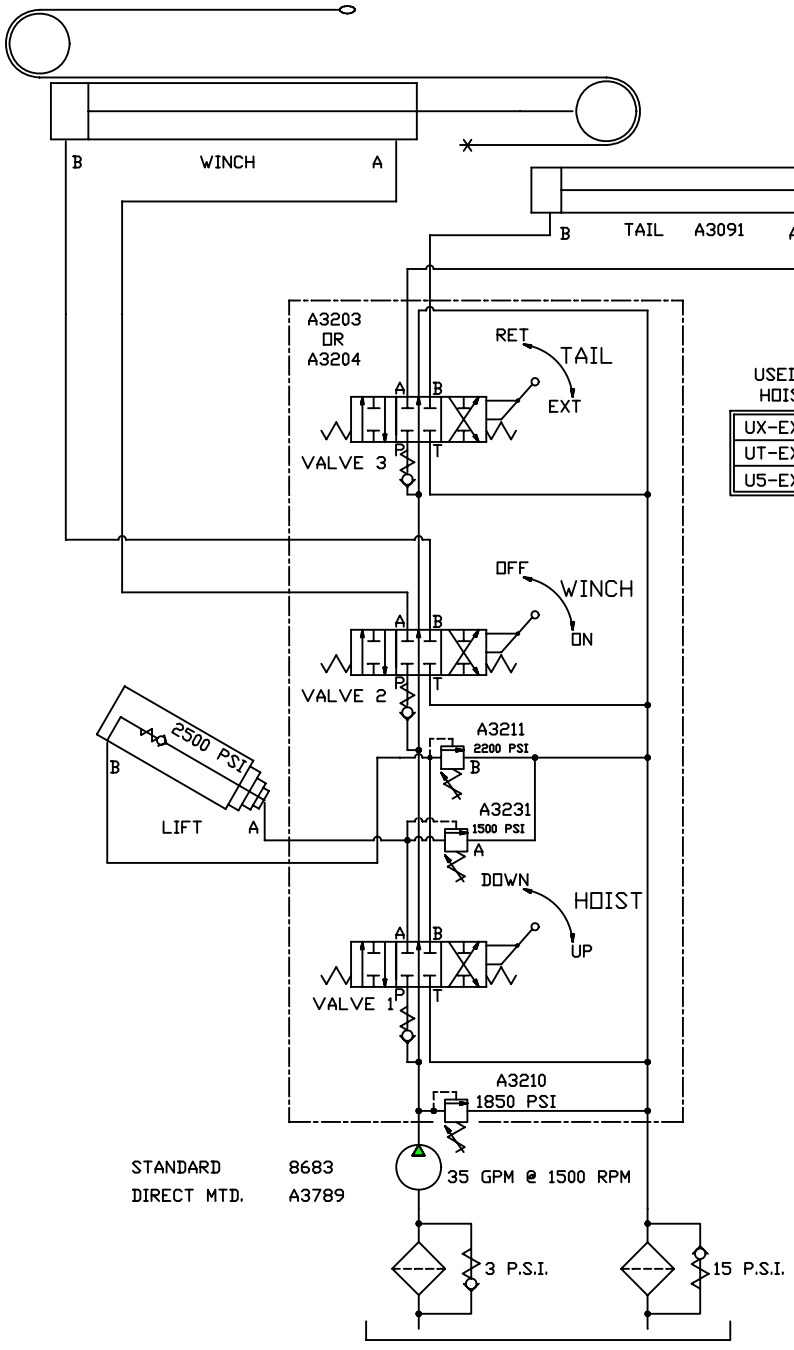
HYDRAULIC CIRCUIT SCHEMATIC FOR ROLL-OFF TRUCK HOIST
SEE APPLICATION CHART.



USED ON HOISTS:	LIFT CYLINDER:	WINCH CYLINDER:
UX-EX-169	A3381	A3147
UT-EX-174	A3383	A3147
U5-EX-194	A3377	A3149

REMARKS:
R1- ADDED CYLINDER CHARTS
R2- 03/02/00 - JJD - UPDATED PART NUMBERS
R3- 05/25/01 - GAB - A3231 WAS A3211
R4- 8/1/02- GB- DIRECT MOUNT WAS A1001

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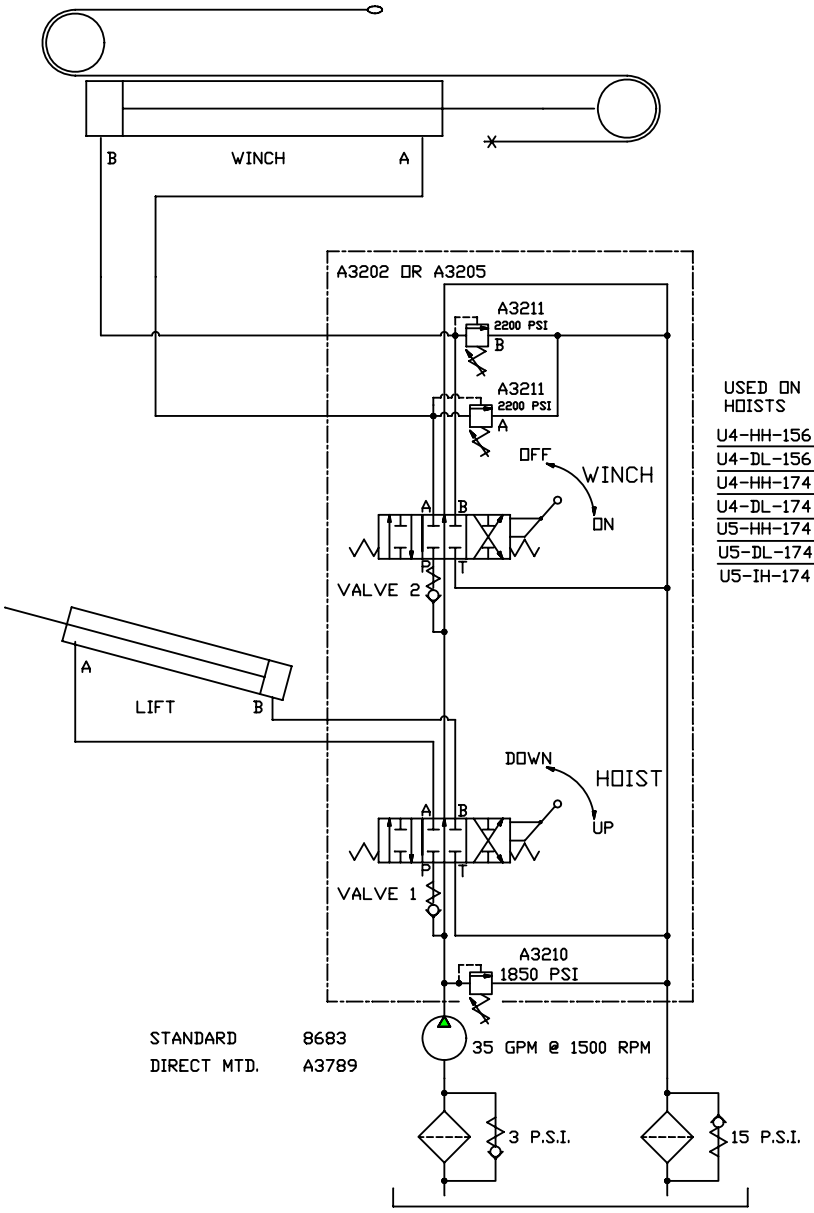
BOOK NO.	42
DRAWING NO.	HS0074
DATE	04/11/88
DRAWN BY	GAB
REVISION	R4

HYDRAULIC CIRCUIT SCHEMATIC FOR ROLL-OFF TRUCK HOIST
SEE APPLICATION CHART.



USED ON HOISTS	LIFT CYLINDER	WINCH CYLINDER
U4-HH-156	A3137	A3117
U4-DL-156	A3137	A3117
U4-HH-174	A3117	A3119
U4-DL-174	A3137	A3119
U5-HH-174	A3137	A3147
U5-DL-174	A3137	A3147
U5-IH-174	A3137	A3147

REMARKS:
R1- ADDED CYLINDER CHARTS
R2- A2084 WAS A1245
R3- 3/2/00 GB UPDATED PART NO'S
R4- 8/2/02-GB DIRECT MOUNT WAS A1001

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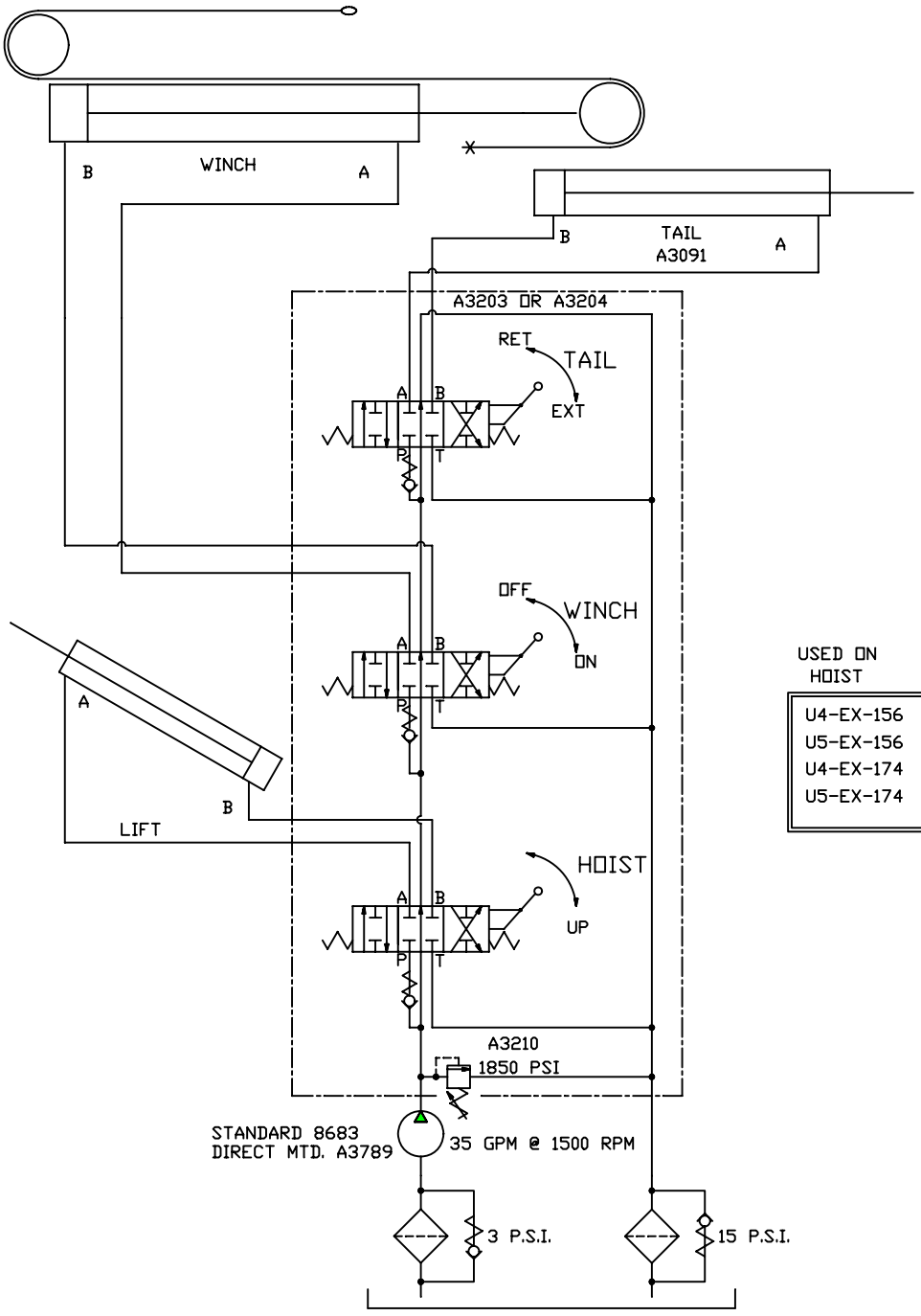
BOOK NO.	42
DRAWING NO.	HS0075
DATE	4/11/88
DRAWN BY	GAB
REVISION	R2

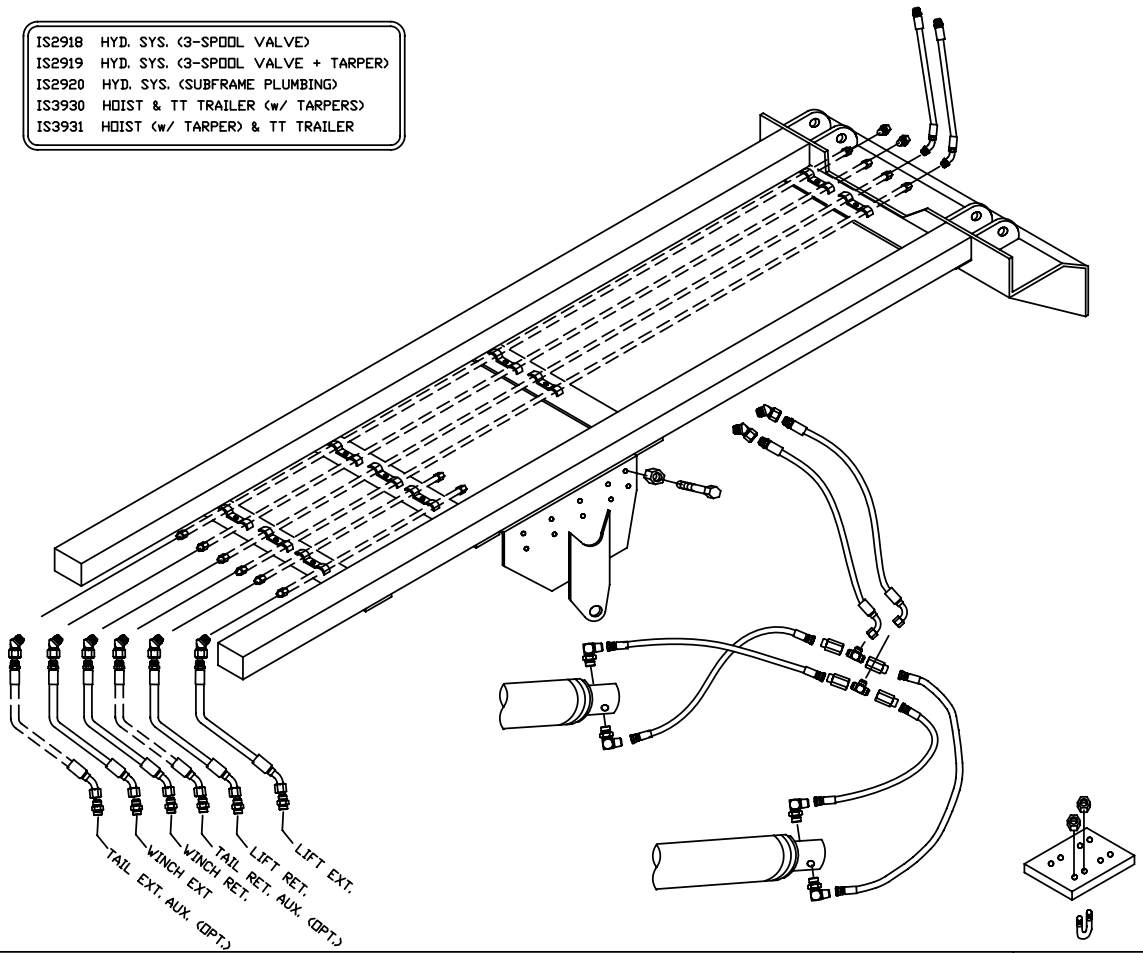
HYDRAULIC CIRCUIT SCHEMATIC FOR ROLL-OFF TRUCK HOIST
SEE APPLICATION CHART.



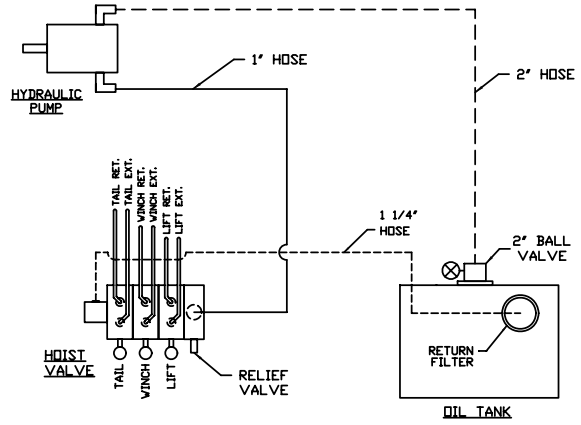
USED ON HOIST	LIFT CYL	WINCH CYL
U4-EX-156	A3137	A3117
U5-EX-156	A3137	A3145
U4-EX-174	A3137	A3119
U5-EX-174	A3137	A3147

REMARKS:
R1 03/02/00 GB REMOVED SINGLE AXLE AND UPDATED PART NO'S
R2 08/05/02 GB DIRECT MOUNT WAS A1001

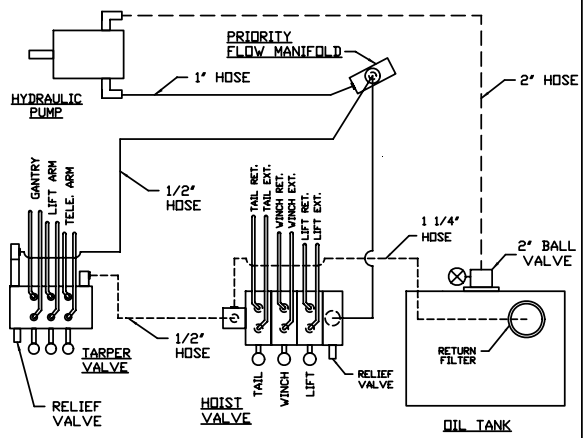
IS2918 HYD. SYS. (3-SPOOL VALVE)
IS2919 HYD. SYS. (3-SPOOL VALVE + TARPER)
IS2920 HYD. SYS. (SUBFRAME PLUMBING)
IS3930 HOIST & TT TRAILER (w/ TARPERS)
IS3931 HOIST (w/ TARPER) & TT TRAILER



IS2918 TYPICAL HYDRAULIC SYSTEM
ROLL-OFF HOIST W/ 3-SPOOL VALVE



IS2919 TYPICAL HYDRAULIC SYSTEM
ROLL-OFF HOIST W/ 3-SPOOL VALVE AND TARPER



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REF. IS3930 IS3931 DXF

	ECN DATE	NO.	BY
R1 CHANGED GATE VALVE TO BALL VALVE	11/06/00	R1	GB

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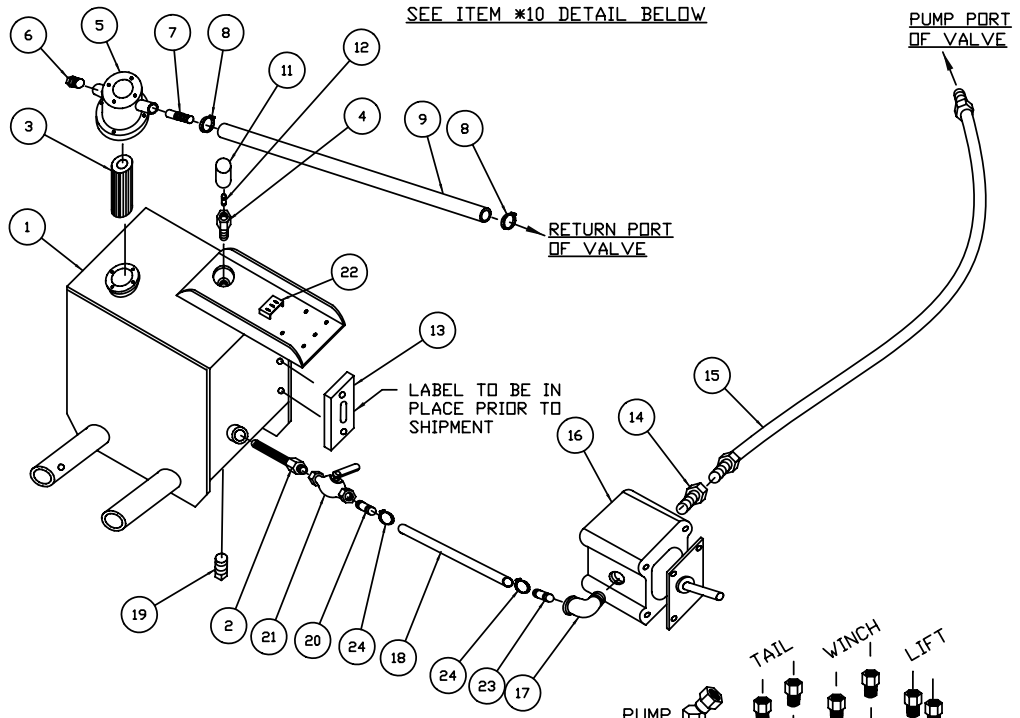
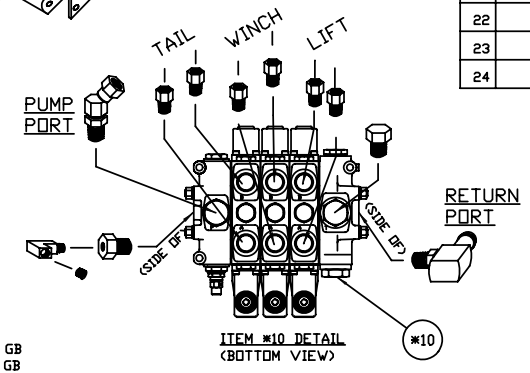
BY LES
DATE 02/04/98

HOISTS H1
HYD. SYSTEM, TYPICAL ROLL-OFF
ROLL-OFF HOISTS
SUBFRAME PLUMBING

BOOK NO. 18
NO. IS2920





NO.	DESCRIPTION	PART NO.	QTY	WT
1	OIL RES WMT,50 GAL,(STD)	6212BD	1	-
2	STRAINER,2" 100M 50GPM SUCTION	A2232	1	-
3	FILTER ELEMENT,25 MICRON CANN	3540	1	-
4	BLK P HEX BUSH 1 1/4MP-1/2FP	1461	1	-
5	FILTER HOUSING TOP	3539	1	-
6	PLUG,1 1/2" SQUARE HEAD PIPE	1364	1	-
7	HYD ADP, 1 1/4HB - 1 1/4 MP	BR4404-20-20	1	-
8	HOSE CLAMP,1/2-1 1/4 WORM DR	2352	2	-
9	HOSE LP 1W 1 1/4	4099	1	-
*10	VALVE, 3-SPOOL ML HYD DIR CONTROL	*	1	-
11	AIR BREATHER,1/2" OIL TANK	1674	1	-
12	HYD ADP, 1/2MD-1/2MP	BR6401-08-08-0	1	-
13	GAUGE,5" OIL LEVEL/TEMP SIGHT	A1126	1	-
14	BLK P HEX BUSH 1 1/2MP-1FP	2946	1	-
15	HOSE 1RM-RM 1 X 56"	3393BD-56	1	-
16	PUMP,35GPM	A3789	1	-
17	BLK P 90L 1 1/2MP-1 1/2FP	1356	1	-
18	LP HOSE 1W 2" X 108"	8514-108	1	-
19	PLUG,3/4" SQUARE HEAD MAG PIPE	9058	1	-
20	HOSE BARB, 2HB-2MP	BR4404-32-32	1	-
21	VALVE,2" BRSS BALL	A2890	1	-
22	NAMEPLATE "OPER. TAG" (TRK)	3315	1	-
23	HOSE BARB, 2HB-1 1/2MP	BR4404-32-24	1	-
24	HOSE CLAMP,1-2 WORM DR	1092	2	-

* REFER TO THE FOLLOWING DRAWINGS FOR A HYDRAULIC VALVE AND FITTINGS DIAGRAM.

DRAWING REFERENCE CHART

IS5082	HYD. VALVE DIAGRAM (NON-AIR)
IS5083	HYD. VALVE DIAGRAM (AIR)

R5 ITEM 1 WAS 4425BD	2/22/05	R5	GB
R4 ITEM 14 WAS 1463, 16 WAS 8683, 17 WAS A2314	5/16/02	R4	GB

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R3 ITEM 1 WAS 2119W, 21 WAS 8440, 19 WAS 1361	11/06/00	R3	GB
R2 HYD VALVE DIAGRAMS WERE IS2923 & IS2925 IN THE REF. CHART	3/2/00	R2	GB
R1 CHANGED ITEM 18 TO 108"	11/19/99	R1	GB
	ECN DATE	NO.	BY

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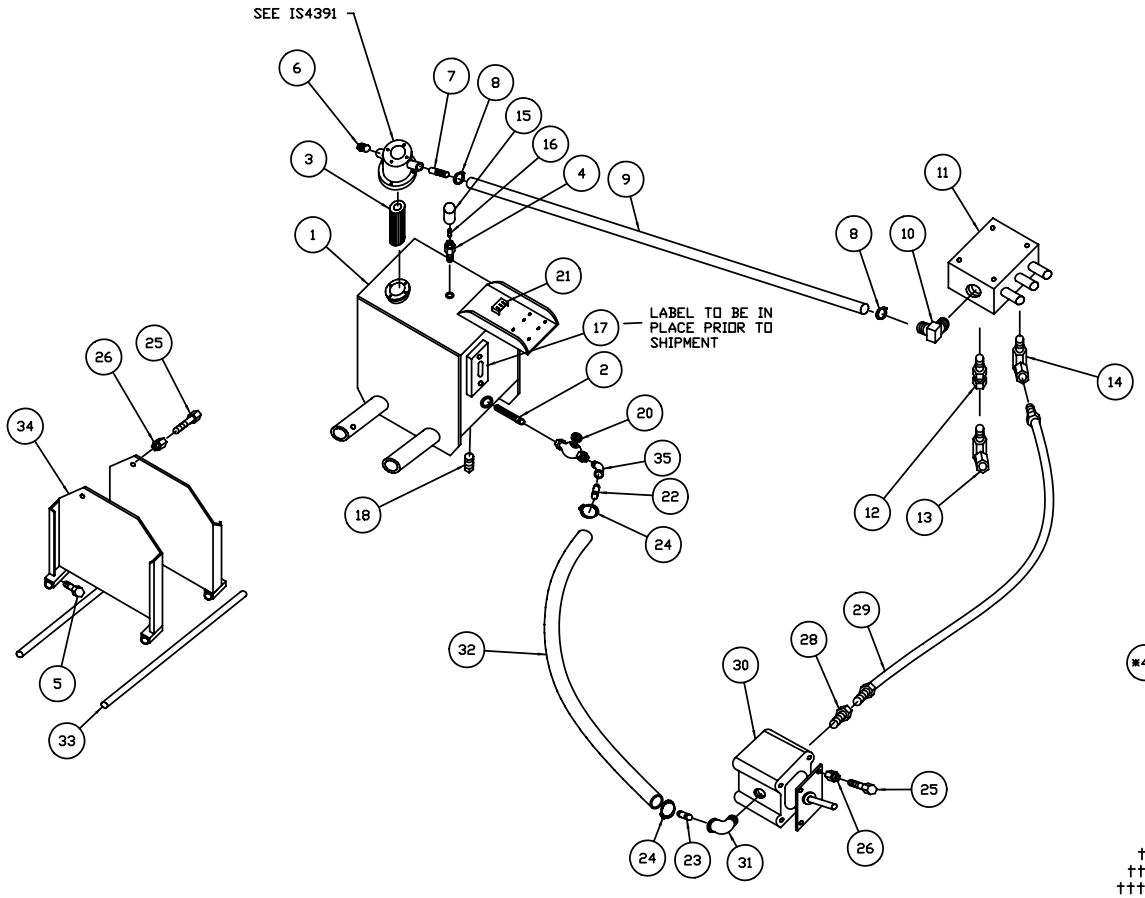
BY LES
DATE 02/11/98

REF. 4228AD | IS4152 | DXF

HOISTS H1
HYDRAULIC SYSTEM, TYPICAL
ROLL-OFF HOISTS

BOOK NO. 18
NO. IS2926



FILTER RATINGS IN MICRONS	
RETURN FILTER	- 25 MICRON
AIR FILTER	- 10 MICRON
SUCTION STRAINER	- 100 MICRON

TOTAL WT. = 517#

† NOTE: ITEM NO. 3 FILTER ELEMENT IS 25 MICRON
†† NOTE: CHECK HOIST REPORT FOR VALVE USED
††† NOTE: OPTIONAL EQUIPMENT
†††† NOTE: FOR VOLVO WHITE W/ HORT MT MUFFLER UNDER FRM
††††† NOTE: SAME AS ABOVE FOR POLY TANK

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ECN	DATE	NO.	BY

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BY	GEORGE
DATE	9/14/04

REF. | DXF

HOISTS H1
OIL RESERVOIR, 50 GALLON
HOISTS
(7065BO)

BOOK NO. 18
NO. IS7002

	NO.	DESCRIPTION	PART NO.	QTY	WT	
	1	OIL TANK	6212BO	1	212	-
	2	OIL STRAINER, 2"	A2232	1	2	-
†	3	FILTER ELEMENT	3540	1	1	-
	4	BLK P HEX BUSH 1 1/4" MP - 1/2 FP	1461	1	-	-
	5	BOLT, 1/2-13X1 G5	5013G5-100	2		-
	6	SQ HEAD P PLUG 1 1/2"	1364	1	-	-
	7	HOSE BARB, 1 1/4 HB - 1 1/4 MP	BR4404-20-20	1		-
	8	1 1/4" HOSE CLAMP	2352	2	-	-
	9	HOSE 1 1/4" X 25 3/4" L.P.	4099-25.75	1	1	-
	10	HOSE BARB, 90L, 1 1/4 HB X 1 1/4 MO	BR4601-20-20	1	-	-
††	11	VALVE (3-SPOOL)	A3203	1	58	-
	12	HYD CONN, 1 MO - 3/4 FP OR	BR6405-16-12-O	6	2	-
	13	HYD ADP, 45L, 3/4 MP - 3/4 FP SW	BR1503-12-12	6	2	-
	14	HYD ADP, 45L, 1 MO - 1 FP SW NOR	BR6902-16-16NWO	1	-	-
	15	AIR FILTER 10 MICRON	1674	1	1	-
	16	HYD ADP, 1/2MO - 1/2MP	BR6401-08-08-O	1	-	-
	17	SIGHT GUAGE	A1126	1	1	-
	18	HYD P PLUG MAGNETIC, 3/4MP	9058	1	-	
	19					
	20	BALL VALVE, 2"	A2890	1	1	
	21	CYLINDER NAME PLATE	3315	1	-	-
	22	HOSE BARB, 2HB - 2MP	BR4404-32-32	1		-
	23	HOSE BARB, 2HB - 1 1/2MP	BR4404-32-24	1	-	-
	24	HOSE CLAMP, 2"	1092	2	-	-
	25	BOLT, 5/8-18X2 G5	63B18G5-200	16	2	
	26	LOCKNUT, 5/8-18 G5	63LN18G5	16	2	
	27	PTO DRIVE (NOT INCLUDED)	-	1	-	-
	28	BLK P HEX BUSH 1 1/2MP-1FP	2946	1	-	
	29	1" HOSE X 56"	3393BO-56	1	-	-
	30	PUMP,35 GPM PTO DIRECT MOUNT	A3789	1	50	-

TOTAL WT. = 335.00 lbs

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CHANGE DESCRIPTION	ECN DATE	NO.	BY

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DO NOT SCALE DRAWING	HOISTS H1	BOOK NO.
SCALE 1" = 1"	OIL RESERVOIR, 50 GALLON	18
BY GEORGE	HOISTS	NO.
DATE 9/14/04	(7065BO)	IS7002-1

NO.	DESCRIPTION	PART NO.	QTY	WT	
31	BLK P 90L 1 1/2MP-1 1/2FP	1356	1	-	
32	HOSE 2" X 108	8514-108	1	2	-
33	2P SCH80 84	200BP80-84	2	72	
34	MOUNTING BRACKET	2260W	2	108	-
35	BLK P 90L 2MP-2FP	1357	1	-	

TOTAL WT. = 182.00 lbs

OPTIONAL DRIVE LINE PUMP

*28	BLK P HEX BUSH, 1 1/4MP - 1FP	1463	1		-
*30	PUMP,35GPM	8683	1	50	-
*31	BLK P, 90L, 1 1/4 MP - 1 1/2 FP	A2314	1	-	
*42	STANDARD U-JOINT	1071	1	2	-
*43	1/4" X 1" WOODRUFF-KEY	1492	2	-	-
*44	SLIP U-JOINT	1072	1	3	-
*45	PTO SHAFT X 36"	953	1	9	-
*46	PUMP MOUNTING PLATE	A774	1	10	-
*47	BOLT, 1/2-13X1 G5	50B13G5-100	8	1	
*48	PUMP MOUNTING BRACKET	2259W	1	46	-

OPTONAL ITEMS

	*1	OIL TANK (W/OUT VALVE BRKT)	7087BO	1	183	
†††	*33	2P SCH160 84	200BP160-84	2	105	
††††	*34	MTG BRACKET (STREET SIDE)	1935BO	1	57	-
††††	*34	MTG BRACKET (CURB SIDE)	1936BO	1	84	-
†††††	*34	MTG BRACKET	1937BO	1	96	-

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CHANGE DESCRIPTION	ECN DATE	NO.	BY

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WINAMAC, INDIANA

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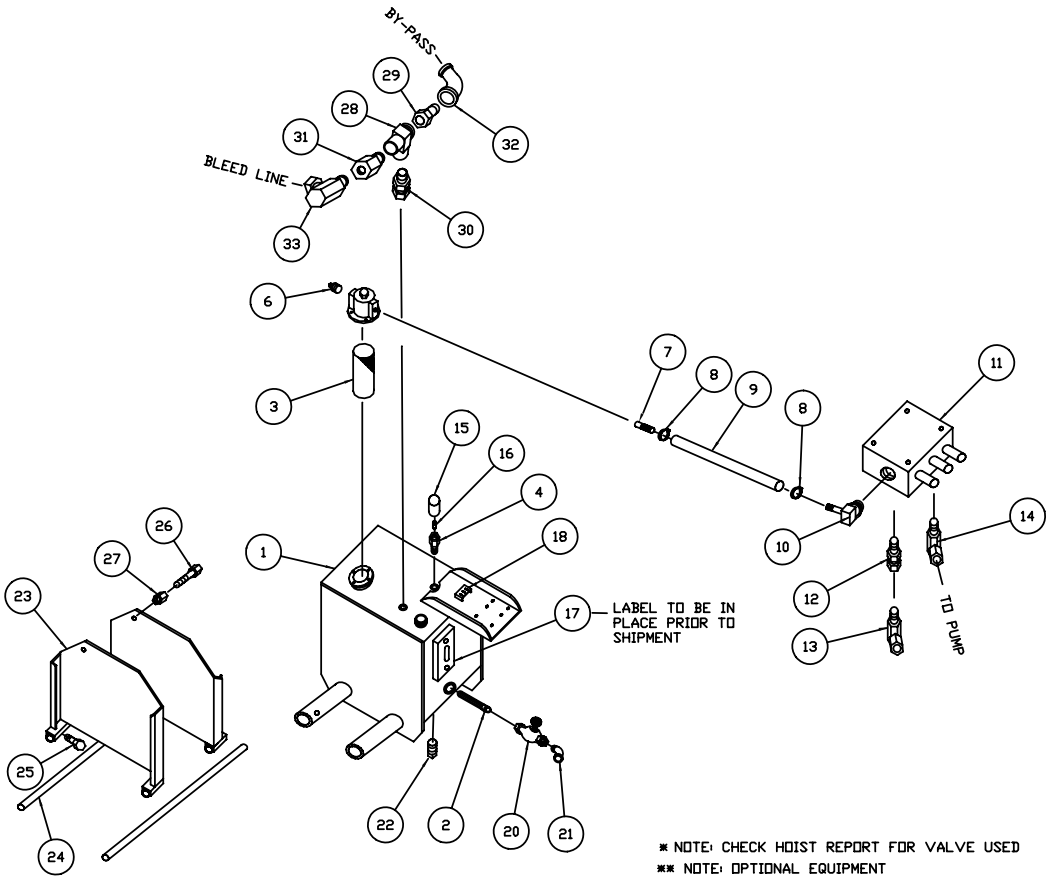
SCALE	1" = 1"
BY	GEORGE
DATE	9/14/04

HOISTS H1
OIL RESERVOIR, 50 GALLON
HOISTS
(7065BO)

BOOK NO. 18
NO. IS7002-2

**	24	2P SCH160 84	200BP160-84	2	105	-
*1		OIL RESERVOIR, W/OUT VALVE BRKT	7087BO	1	183	-



NO.	DESCRIPTION	PART NO.	QTY	WT	
1	OIL RESERVOIR, 50 GAL	7088BO	1	210	-
2	STRAINER,2" 100M 50GPM SUCTION	A2232	1	2	-
3	FILTER ELEMENT	3540	1	-	-
4	BLK P BUSH, 1 1/4MP-1/2FP	1461	1	-	-
5			-	-	-
6	SQ HEAD P PLUG, 1 1/2 MP	1364	1	-	-
7	HOSE BARB, 1 1/4HB-1 1/4MP	BR4404-20-20	1	-	-
8	HOSE CLAMP 1 1/4"	2352	2	-	-
9	HOSE 1 1/4" X 25 3/4" LP	4099-25.75	1	-	-
10	HOSE BARB, 90L, 1 1/4HB-1 1/4MO	BR4601-20-20	1	1	-
* 11	VALVE		-	-	-
12	HYD ADP, 1MO-3/4FP	BR6405-16-12-0	6	-	-
13	HYD ADP, 45L, 3/4MP-3/4FP SW	BR1503-12-12	6	-	-
14	HYD ADP, 45L, 1MO-1FP SW NOR	BR6902-16-16NWO	1	1	-
15	AIR FILTER	1674	1	-	-
16	HYD ADP,1/2MO-1/2MP W/O	BR6401-08-08-O	1	-	-
17	GAUGE,5" OIL LEVEL/TEMP SIGHT	A1126	1	-	-
18	CYL. NAME PLATE	3315	1	-	-
19					-
20	BALL VALVE 2"	A2890	1	-	-
21	BLK P 90L, 2MP-2FP	1357	1	1	-
22	PLUG,3/4" SQUARE HEAD MAG PIPE	9085	1	-	-
23	MOUNTING BRACKET	2260W	2	60	-
** 24	2P SCH80 84	200BP80-84	2	72	-
25	BOLT, 1/2-13X1 G5	50B13G5-100	6	1	-
26	BOLT, 1/2-20X2 G5	50B20G5-200	12	-	-
27	LOCKNUT, 1/2-20 G5	50LN20G5	12	-	-
28	HYD ADP TEE, 3/4MP-3/4FP-3/4FP	BR5602-12-12-12	1	-	-
29	HYD BUSH, 1 1/4MP-1FP	BR5406-20-16	1	-	-
30	HYD ADP, 3/4 MP-3/4 FP SW	BR1404-12-12	1	-	-
31	BLK P HEX BUSH, 3/4 MP-3/8 FP	1455	1	-	-
32	BLK P 90L, 1 1/4FP-1 1/4FP	1346	1	-	-
33	HYD ADP, 90L, 3/8 MP-3/8 FP SW	BR1501-06-06	1	-	-

* NOTE: CHECK HOIST REPORT FOR VALVE USED
** NOTE: OPTIONAL EQUIPMENT
* NOTE: USE 4870 (3 SPOOL) OR 4869 (2 SPOOL)

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ECN DATE	NO.	BY

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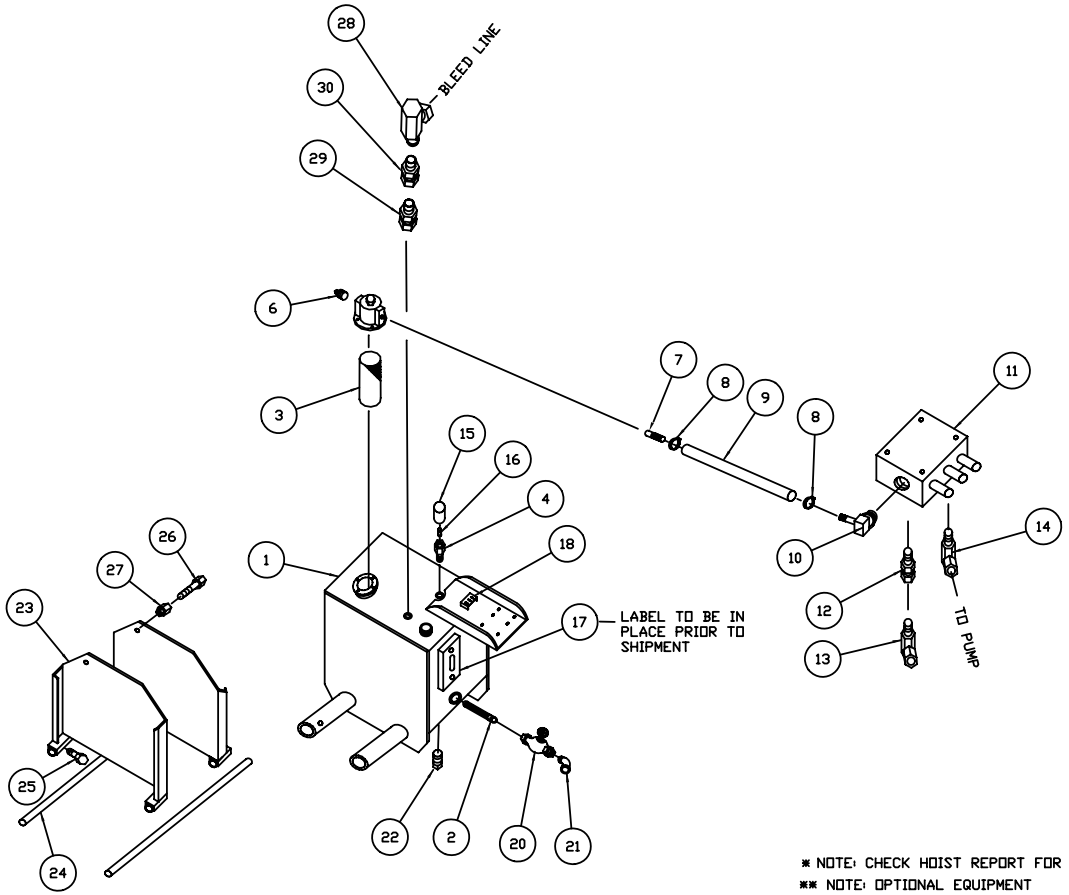
SCALE 1/20" = 1"
BY GEORGE
DATE 9/29/04

HOISTS H
OIL RES ASSY/50 GAL
HOISTS, FRONT MTD PUMP
(7091BO)

BOOK NO. 18
NO. IS7032

**	24	2P SCH160 84	200BP160-84	2	105		-
	*1	OIL RESERVOIR, W/OUT VALVE BRKT	7087B0	1	183		-



NO.	DESCRIPTION	PART NO.	QTY	WT	
1	OIL RESERVOIR, 50 GAL	7088B0	1	210	-
2	STRAINER,2" 100M 50GPM SUCTION	A2232	1	2	-
3	FILTER ELEMENT	3540	1	-	-
4	BLK P BUSH, 1 1/4MP-1/2FP	1461	1	-	-
5			-	-	-
6	SQ HEAD P PLUG, 1 1/2 MP	1364	1	-	-
7	HOSE BARB, 1 1/4HB-1 1/4MP	BR4404-20-20	1	-	-
8	HOSE CLAMP 1 1/4"	2352	2	-	-
9	HOSE 1 1/4" X 25 3/4" LP	4099-25.75	1	-	-
10	HOSE BARB, 90L, 1 1/4HB-1 1/4M0	BR4601-20-20	1	1	-
* 11	VALVE		-	-	-
12	HYD ADP, 1M0-3/4FP	BR6405-16-12-0	6	-	-
13	HYD ADP, 45L, 3/4MP-3/4FP SW	BR1503-12-12	6	-	-
14	HYD ADP, 45L, 1M0-1FP SW NOR	BR6902-16-16NW0	1	1	-
15	AIR FILTER	1674	1	-	-
16	HYD ADP,1/2M0-1/2MP W/O	BR6401-08-08-0	1	-	-
17	GAUGE,5" OIL LEVEL/TEMP SIGHT	A1126	1	-	-
18	CYL. NAME PLATE	3315	1	-	-
19					-
20	BALL VALVE 2"	A2890	1	-	-
21	BLK P 90L, 2MP-2FP	1357	1	1	-
22	PLUG,3/4" SQUARE HEAD MAG PIPE	9058	1	-	-
23	MOUNTING BRACKET	2260W	2	60	-
** 24	2P SCH80 84	200BP80-84	2	72	-
25	BOLT, 1/2-13X1 G5	50B13G5-100	6	1	-
26	BOLT, 1/2-20X2 G5	50B20G5-200	12	-	-
27	LOCKNUT, 1/2-20 G5	50LN20G5	12	-	-
28	HYD ADP, 90L, 3/8MP X 3/8FP SW	BR1501-06-06	1	-	-
29	BLK P HEX BUSH, 1 1/4 MP-3/4 FP	2850	1	-	-
30	BLK P HEX BUSH, 3/4 MP-3/8 FP	1455	1	-	-

* NOTE: CHECK HOIST REPORT FOR VALVE USED
** NOTE: OPTIONAL EQUIPMENT
* NOTE: USE 4870 (3 SPOOL) OR 4869 (2 SPOOL)

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REF. 6738A0 7091B0 DXF

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GALBREATH INCORPORATED WINAMAC, INDIANA

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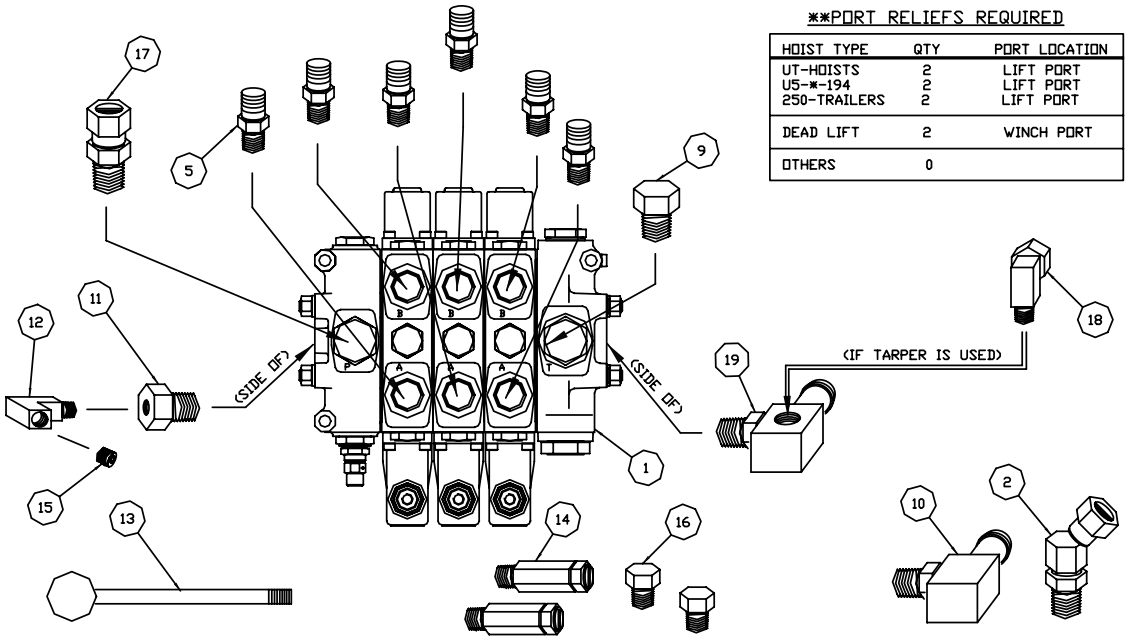
BY GEORGE
DATE 9/29/04

HOISTS H
OIL RESERVOIR, 50 GAL
HOISTS, FRONT MTD PUMP 35 GPM
(7090B0)

BOOK NO. 18
NO. IS7031

IS5082 HYD. VALVE DIAGRAM (NON-AIR)
IS5083 HYD. VALVE DIAGRAM (AIR)
IS2926 TYPICAL HYDRAULIC SYSTEM

3rd SPOOL USED				
5	HYD ADP,3/4MJ-3/4MO W/O	BR6400-12-12-0	6	
16	HYD PLUG, 3/4MO W/O	BR6408-12-0	0	
3rd SPOOL NOT USED				
5	HYD ADP,3/4MJ-3/4MO W/O	BR6400-12-12-0	4	
16	HYD PLUG, 3/4MO W/O	BR6408-12-0	2	



**PORT RELIEFS REQUIRED

HOIST TYPE	QTY	PORT LOCATION
UT-HOISTS U5-*-194 250-TRAILERS	2 2 2	LIFT PORT LIFT PORT LIFT PORT
DEAD LIFT	2	WINCH PORT
OTHERS	0	

NO.	DESCRIPTION	PART NO.	QTY	WT
1	VALVE,3 SPOOL ML HYD	A3203	1	
2	HYD ADP,45L, 1MO-1FP SW N/O	SEE CHART	-	
3				
4				
5	HYD ADP,3/4MJ-3/4MO W/O	SEE CHART		
6				
7				
8				
9	HYD PLUG, 1MO W/O	BR6408-16-0	1	
10	HOSE BARB 90L 1 1/4HB-1MO	SEE CHART	-	
11	PLUG,1/4 NPT TAPPED 1" O-RING	F816	1	
12	HYD ADP,90L, 1/4MP-1/4FP	BR5502-04-04	1	
13	HANDLE, 40 GPM VALVE	A3215	3	
14	PORT RELIEF 40GPM 1740-4060PSI	A3211	**	
15	PLUG,1/4" HEX SOCKET PIPE	4251	1	
16	HYD PLUG, 3/4MO W/O	SEE CHART	-	
17	HYD ADP, 1MO-1FP SW	SEE CHART	-	
18	HYD ADP,90L, 1/2MO-1/2FP SW	SEE CHART	-	
19	HOSE BARB 90°, DRILLED	SEE CHART	-	

TARPER USED				
2	HYD ADP,45L, 1MO-1FP SW N/O	BR6902-16-16NWO	0	
10	HOSE BARB 90L 1 1/4HB-1MO	BR4601-20-16	0	
17	HYD ADP, 1MO-1FP SW	BR6900-16-16-O	1	
18	HYD ADP, 90L, 1/2MO-1/2FP SW	BR6901-08-08NWO	1	
19	DRILLED HOSE BARB,90DEG	T464	1	
TARPER NOT USED				
2	HYD ADP,45L, 1MO-1FP SW N/O	BR6902-16-16NWO	1	
10	HOSE BARB 90L 1 1/4HB-1MO	BR4601-20-16	1	
17	HYD ADP, 1MO-1FP SW	BR6900-16-16-O	0	
18	HYD ADP, 90L, 1/2MO-1/2FP SW	BR6901-08-08NWO	0	
19	DRILLED HOSE BARB,90DEG	T464	0	

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REF. IS2926 IS4470 DXF

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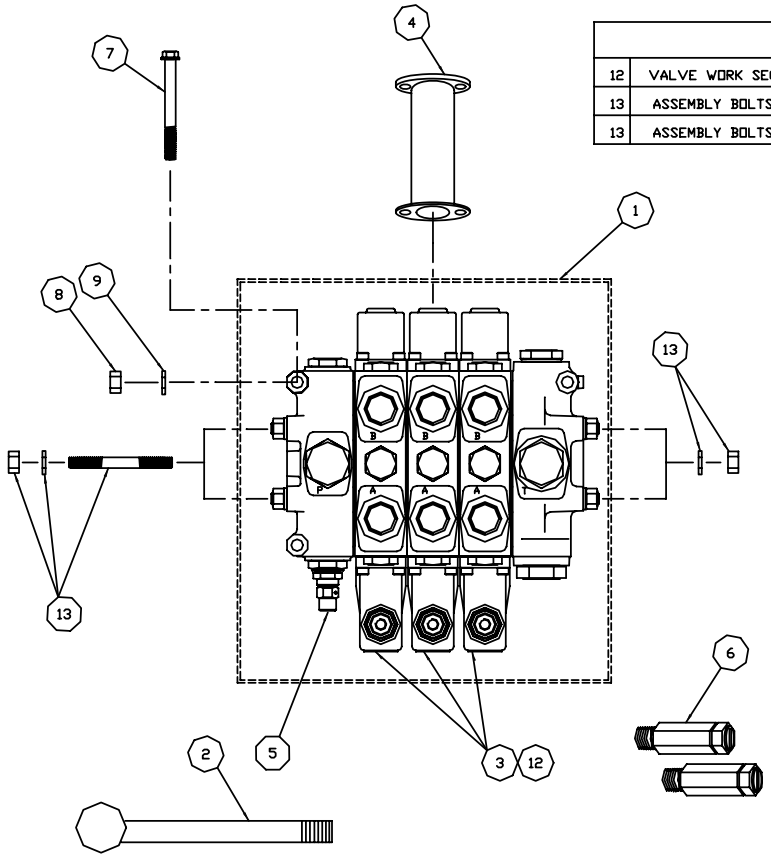
BY GEORGE
DATE 7/27/01

HOISTS H1
HYD. VALVE DIAGRAM, NON-AIR
HYD. VALVE (A3203) AND HYD. FITTINGS

BOOK NO. 18
NO. IS5082

SEAL KITS				
10	SEAL KIT, WORK SECTION	A3212	1	
11	SEAL KIT, INLET SECTION	A3213	1	

SPECIALS				
12	VALVE WORK SECTION,MOTOR SPOOL	A3222	*	
13	ASSEMBLY BOLTS, 3-SPOOL VALVE	A3226	4	
13	ASSEMBLY BOLTS, 4-SPOOL VALVE	A3225	4	



NO.	DESCRIPTION	PART NO.	QTY	WT
1	VALVE,2 SPOOL ML HYD	A3202	1	
1	VALVE,2 SPOOL ML W/AIR HYD	A3205	1	
1	VALVE,3 SPOOL ML HYD	A3203	1	
1	VALVE,3 SPOOL ML W/AIR HYD	A3204	1	
2	HANDLE, 40 GPM VALVE	A3215	*	
3	VALVE WORK SECTION, ML HYD	A3208	*	
3	VALVE WORK SECTION, ML W/AIR H	A3209	*	
4	AIR CYLINDER ONLY	A3214	*	
5	MAIN RELIEF 40GPM 1740-4060PSI	A3210	1	
6	PORT RELIEF 40GPM 1740-4060PSI	A3211	**	
7	BOLT, 3/8-16X4 G5	38B16G5-400	3	
8	LOCKNUT, 3/8-16 G5	38LN16G5	3	
9	WASHER, 3/8 G5 USS	38WG5USS	3	

* DETERMINED BY THE NUMBER AND/OR TYPE OF SPOOLS.
** REFER TO PORT RELIEFS CHART

*** PORT RELIEFS REQUIRED

HOIST TYPE	QTY	PORT LOCATION
UT-HOISTS U5-194 250-TRAILERS	2 2 2	LIFT PORT LIFT PORT LIFT PORT
DEAD LIFT	2	WINCH PORT
OTHERS	0	

REPLACED DRAWING IS2927

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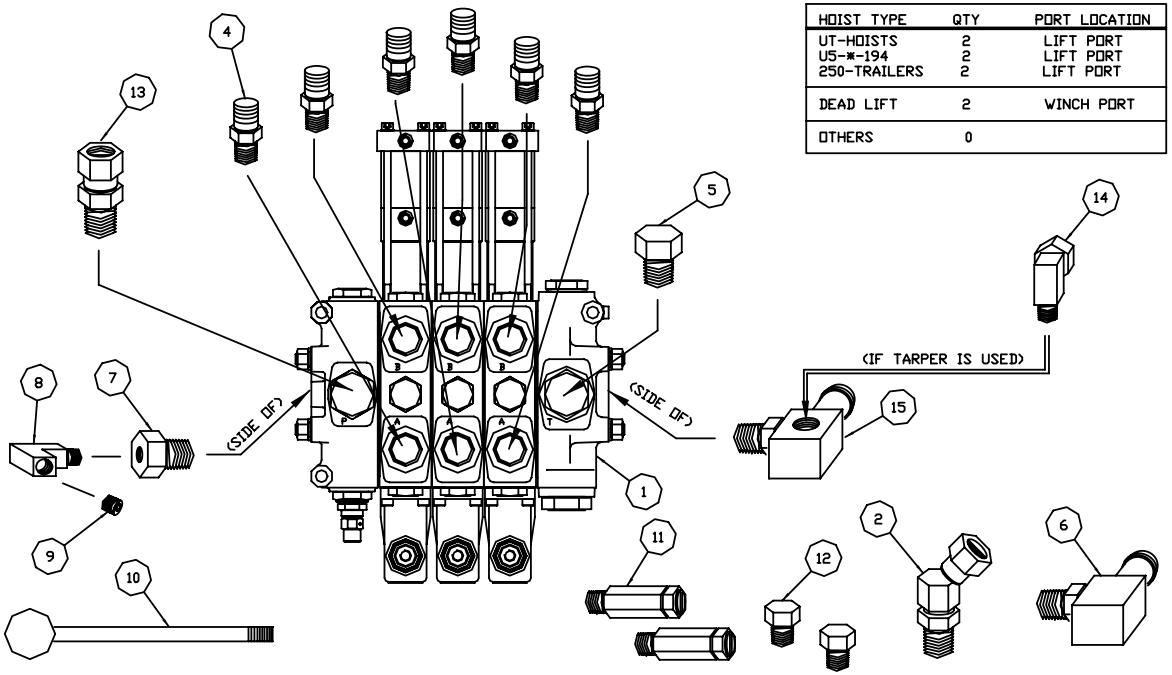
						REF.			DXF
				GALBREATH INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H1 HYDRAULIC VALVE		BOOK NO.	18
					SCALE 1/4" = 1"				
R1 REMOVED PARTS FOR CABLE CONTROLS	03/02/00	R1	GB		BY GEORGE			NO.	IS4346
	ECN DATE	NO.	BY		DATE 11/11/99	VARIOUS HYDRAULIC VALVES			

IS5082 HYD. VALVE DIAGRAM (NON-AIR)
IS5083 HYD. VALVE DIAGRAM (AIR)
IS2926 TYPICAL HYDRAULIC SYSTEM

3rd Spool Used				
4	HYD ADP,3/4MJ-3/4MO W/O	BR6600-12-12-0	6	
12	HYD PLUG, 3/4MO W/O	BR6408-12-0	0	
3rd Spool Not Used				
4	HYD ADP,3/4MJ-3/4MO W/O	BR6400-12-12-0	4	
12	HYD PLUG, 3/4MO W/O	BR6408-12-0	2	

**PORT RELIEFS REQUIRED

HOIST TYPE	QTY	PORT LOCATION
UT-HOISTS U5-*-194 250-TRAILERS	2 2 2	LIFT PORT LIFT PORT LIFT PORT
DEAD LIFT	2	WINCH PORT
OTHERS	0	



NO.	DESCRIPTION	PART NO.	QTY	WT
1	VALVE,3 SPOOL ML W/AIR HYD	A3204	1	
2	HYD ADP,45L, 1MO-1FP SW N/O	SEE CHART	-	
3			-	
4	HYD ADP,3/4MJ-3/4MO W/O	SEE CHART	-	
5	HYD PLUG, 1MO W/O	BR6408-16-0	1	
6	HOSE BARB 90L 1 1/4HB-1MO	SEE CHART	-	
7	PLUG,1/4 NPT TAPPED 1" O-RING	F816	1	
8	HYD ADP,90L, 1/4MP-1/4FP	BR5502-04-04	1	
9	PLUG,1/4" HEX SOCKET PIPE	4251	1	
10	HANDLE, 40 GPM VALVE	A3215	3	
11	PORT RELIEF 40GPM 1740-4060PSI	A3211	**	
12	HYD PLUG, 3/4MO W/O	SEE CHART	-	
13	HYD ADP, 1MO-FP SW	SEE CHART	-	
14	HYD ADP, 90L, 1/2MO-1/2FP SW	SEE CHART	-	
15	HOSE BARB 90°, DRILLED	SEE CHART	-	

TARPER USED				
2	HYD ADP,45L, 1MO-1FP SW N/O	BR6902-16-16NWO	0	
6	HOSE BARB 90L 1 1/4HB-1MO	BR4601-20-16	0	
13	HYD ADP, 1MO-FP SW	BR6900-16-16-O	1	
14	HYD ADP, 90L, 1/2MO-1/2FP SW	BR6901-08-08NWO	1	
15	DRILLED HOSE BARB,90DEG	T464	1	
TARPER NOT USED				
2	HYD ADP,45L, 1MO-1FP SW N/O	BR6902-16-16NWO	1	
6	HOSE BARB 90L 1 1/4HB-1MO	BR4601-20-16	1	
13	HYD ADP, 1MO-FP SW	BR6900-16-16-O	0	
14	HYD ADP, 90L, 1/2MO-1/2FP SW	BR6901-08-08NWO	0	
15	DRILLED HOSE BARB,90DEG	T464	0	

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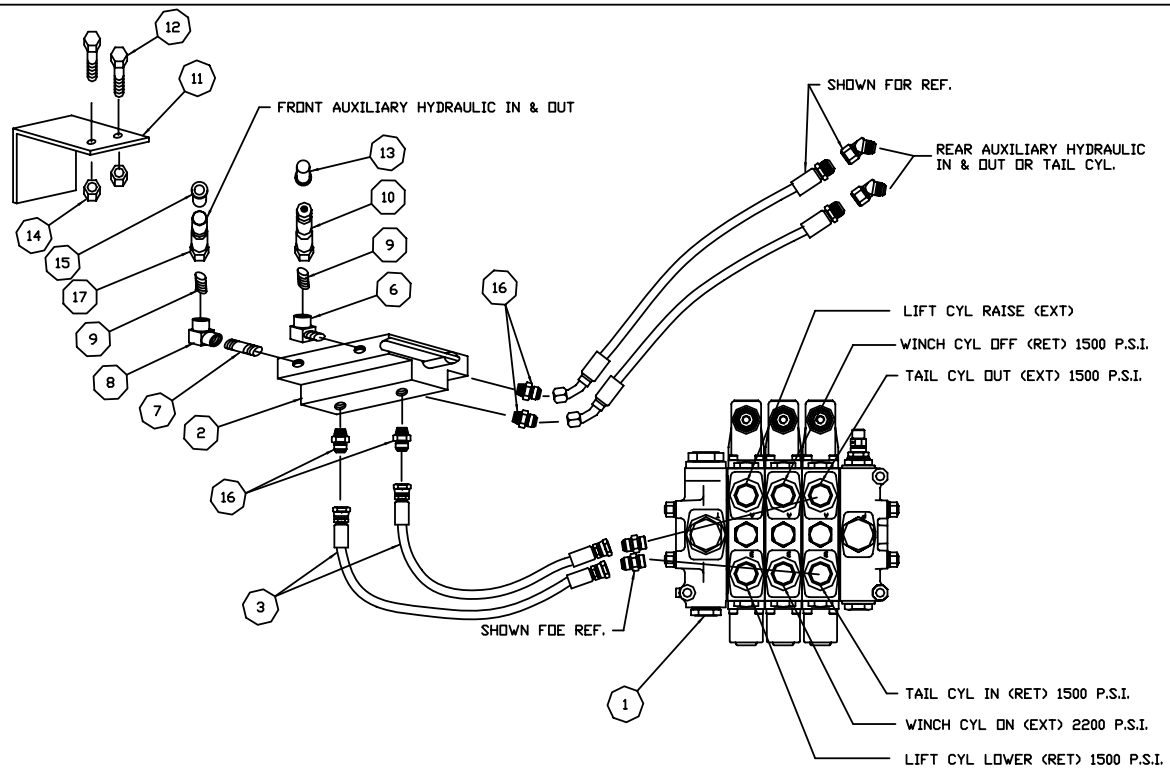
REF. IS2926 IS4471 DXF

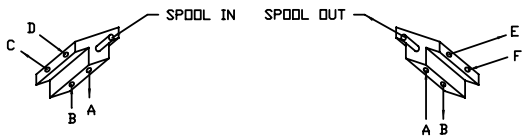
HOISTS H1
HYD. VALVE DIAGRAM, AIR

HYD. VALVE (A3204) AND HYD. FITTINGS

BOOK NO. 18
NO. IS5083



NO.	DESCRIPTION	PART NO.	QTY	WT
1	VALVE	-	1	
2	VALVE,DBL SELECTOR 3/4"	1024	1	12
3	HOSE 3/4-3/4 JIC SW FE X 27 1/2	3420B0-27.5	2	
4				
5				
6	HYD ADP,90L,3/4MP-3/4FP	BR5502-12-12	1	
7	BLK P NIP 3/4X4	1403	1	
8	HYD ADP,90L,3/4FP-3/4FP	BR5504-12-12	1	
9	BLK P NIP 3/4X1 1/4 (CLOSE)	1018	2	
10	COUPLER,3/4" MALE QUICK DISC	6923	1	
11	MPUNTING BRACKET	950	1	4
12	BOLT,3/8-16X2 1/2 G5	38B16G5-250	2	
13	DUST CAP,5/8" & 3/4" STEEL	3372	1	
14	LOCKNUT,3/8-16 G5	38LN16G5	2	
15	DUST PLUG,3/4" PLASTIC	6931	1	
16	HYD ADP,3/4MJ-3/4MP	BR2404-12-12	4	
17	COUPLER.QUICK DISC,FEM 3/4	6927	1	



PORTING KEY

WITH SPOOL PUSHED INTO HOUSING : (VIEW FROM HANDLE END)
PORTS A AND D ARE CONNECTED TO EACH OTHER.
PORTS B AND C ARE CONNECTED TO EACH OTHER.

WITH SPOOL PULLED OUT OF HOUSING : (VIEW FROM HANDLE END)
PORTS A AND E ARE CONNECTED TO EACH OTHER.
PORTS B AND F ARE CONNECTED TO EACH OTHER.

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DATE 7/30/01

REF. 1222A0 IS0247 DXF

HOISTS H
DOUBLE SELECTOR VALVE INSTALLATION
HOISTS

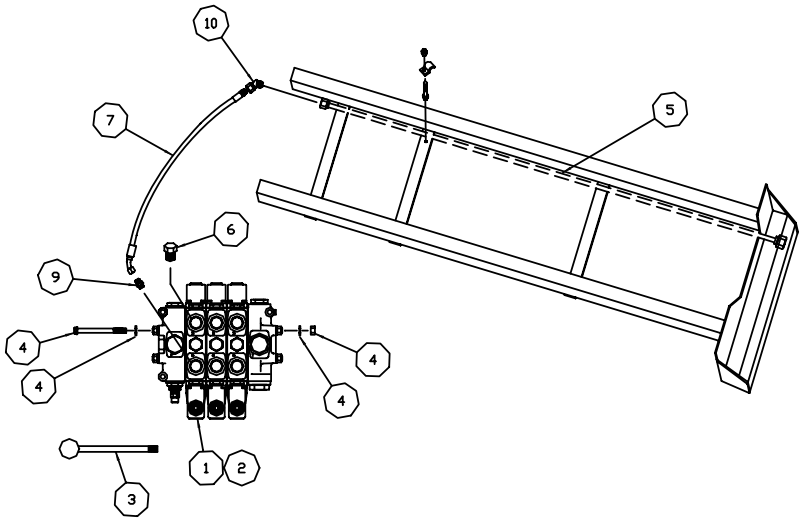
BOOK NO. 18
NO. IS5084

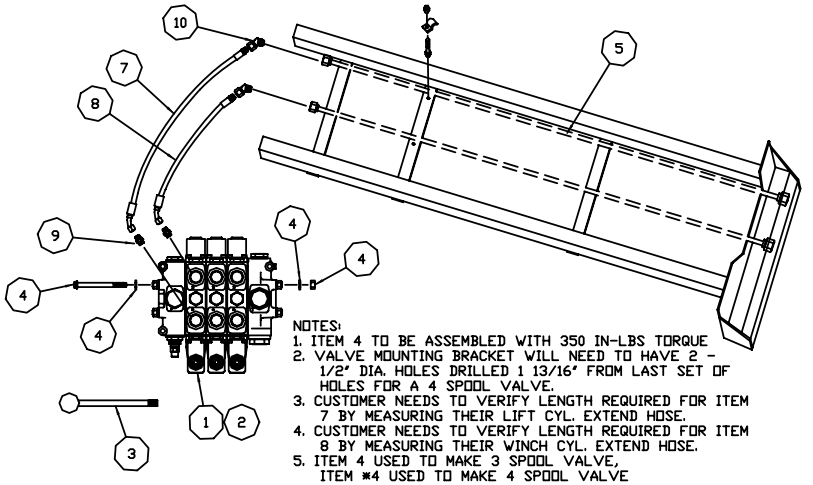
SINGLE ACTING WET KIT PARTS LIST

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	VALVE,CENTER SECTION ML HYD	A3208	1		-
2	SEAL KIT	A3212	1		-
3	HANDLE, 40 GPM VALVE	A3215	1		-
4	TIE RODS 3SPOOL VALVE	A3226	4		-
*4	TIE RODS 4SPOOL VALVE	A3225	4		-
5	WET KIT,SA @ REAR	5151BO	1		-
6	HYD PLUG,3/4MO W/O	BR6408-12-O	1		-
7	HOSE 3/4FJ 45L 1MJ 3/4 X62	4816BO-62	1		-
8	HOSE 3/4FJ 45L 1MJ 3/4 X56	NOT USED	1		-
9	HYD ADP,3/4MJ-3/4MO W/O	BR6400-12-12-O	1		-
10	HYD 45,1MJ-1FJ SW	BR6502-16-16	1		-

DOUBLE ACTING WET KIT PARTS LIST

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	VALVE,CENTER SECTION ML HYD	A3208	1		-
2	SEAL KIT	A3212	1		-
3	HANDLE, 40 GPM VALVE	A3215	1		-
4	TIE RODS 3SPOOL VALVE	A3226	4		-
*4	TIE RODS 4SPOOL VALVE	A3225	4		-
5	WET KIT,DA @ REAR	5152BO	1		-
6	HYD PLUG,3/4MO W/O	NOT USED			-
7	HOSE 3/4FJ 45L 1MJ 3/4 X62	4816BO-62	1		-
8	HOSE 3/4FJ 45L 1MJ 3/4 X56	4816BO-56	1		-
9	HYD ADP,3/4MJ-3/4MO W/O	BR6400-12-12-O	2		-
10	HYD 45,1MJ-1FJ SW	BR6502-16-16	2		-





NOTES:
1. ITEM 4 TO BE ASSEMBLED WITH 350 IN-LBS TORQUE
2. VALVE MOUNTING BRACKET WILL NEED TO HAVE 2 - 1/2" DIA. HOLES DRILLED 1 13/16" FROM LAST SET OF HOLES FOR A 4 SPOOL VALVE.
3. CUSTOMER NEEDS TO VERIFY LENGTH REQUIRED FOR ITEM 7 BY MEASURING THEIR LIFT CYL. EXTEND HOSE.
4. CUSTOMER NEEDS TO VERIFY LENGTH REQUIRED FOR ITEM 8 BY MEASURING THEIR WINCH CYL. EXTEND HOSE.
5. ITEM 4 USED TO MAKE 3 SPOOL VALVE, ITEM *4 USED TO MAKE 4 SPOOL VALVE

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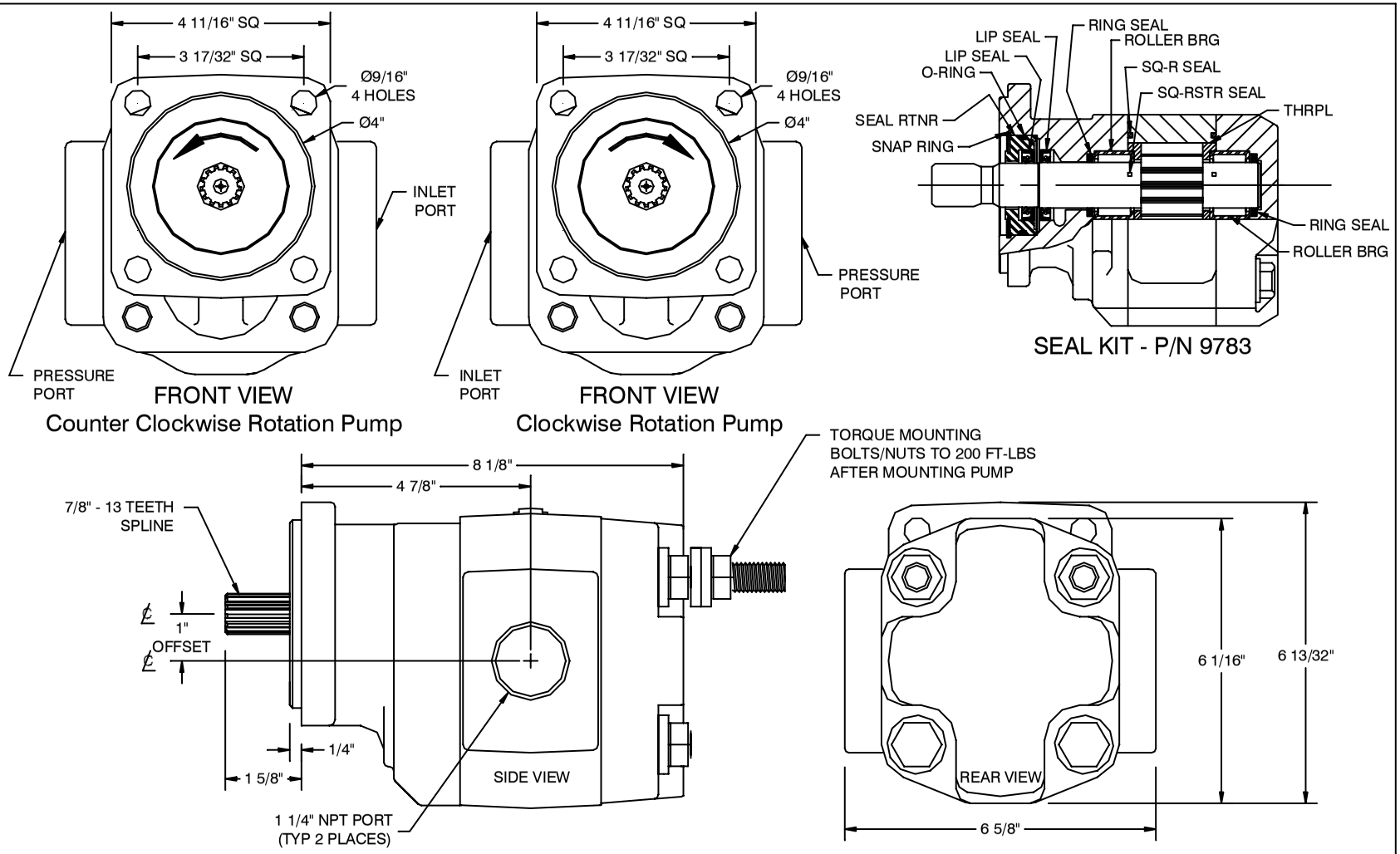
DATE 8/3/01

HOISTS H
WET KIT, FOR A3202 VALVE
CABLE HOIST
(0105GO)

BOOK NO. 18
NO. IS5085



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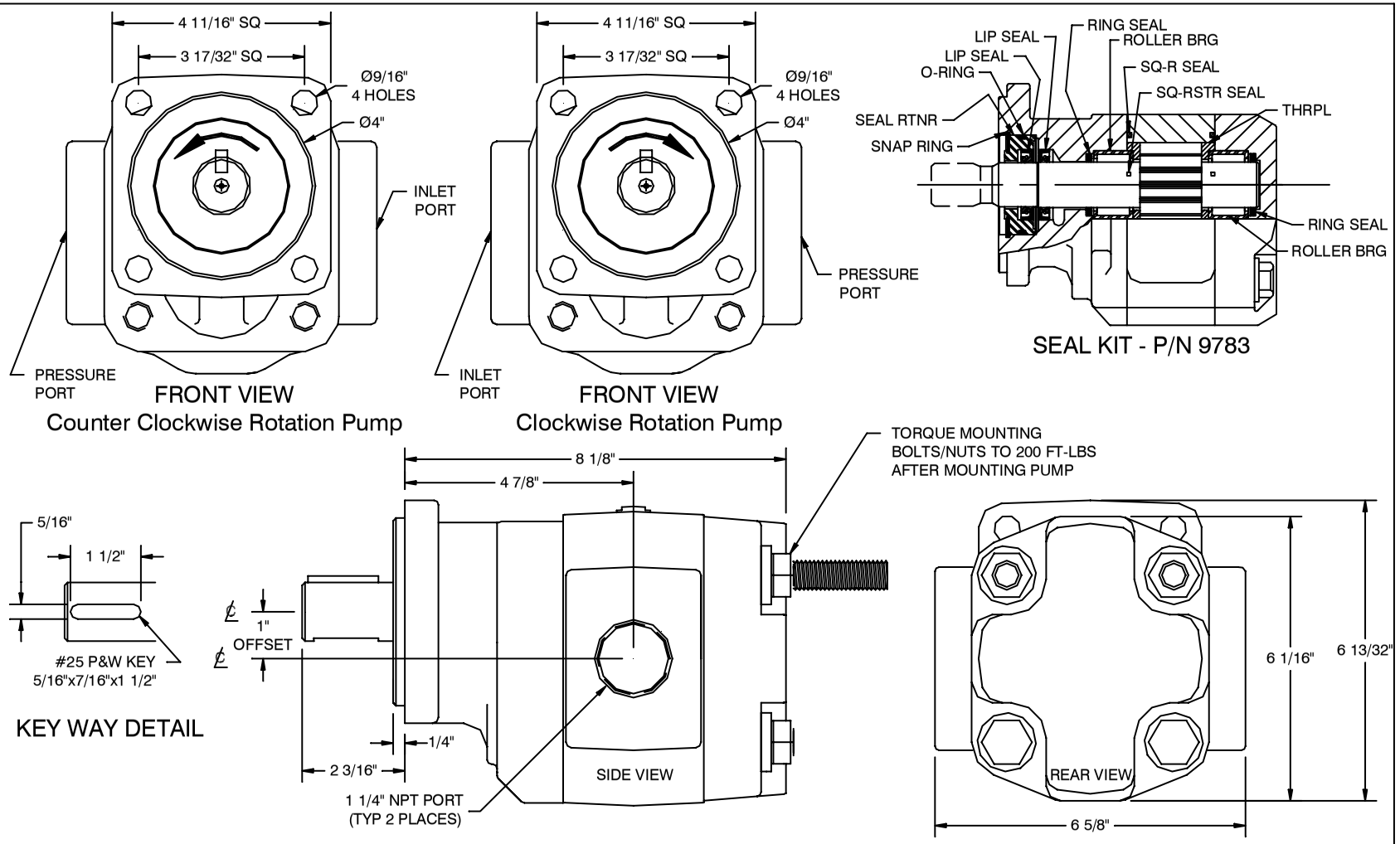
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING SCALE 1/3" = 1" BY HMK DATE 01/05/00	HOISTS H1 DIRECT MOUNT PUMP, P/N A1001 35 GPM @ 1500 RPM	BOOK NO. 18 NO. IS4405
ECN DATE	NO.	BY				



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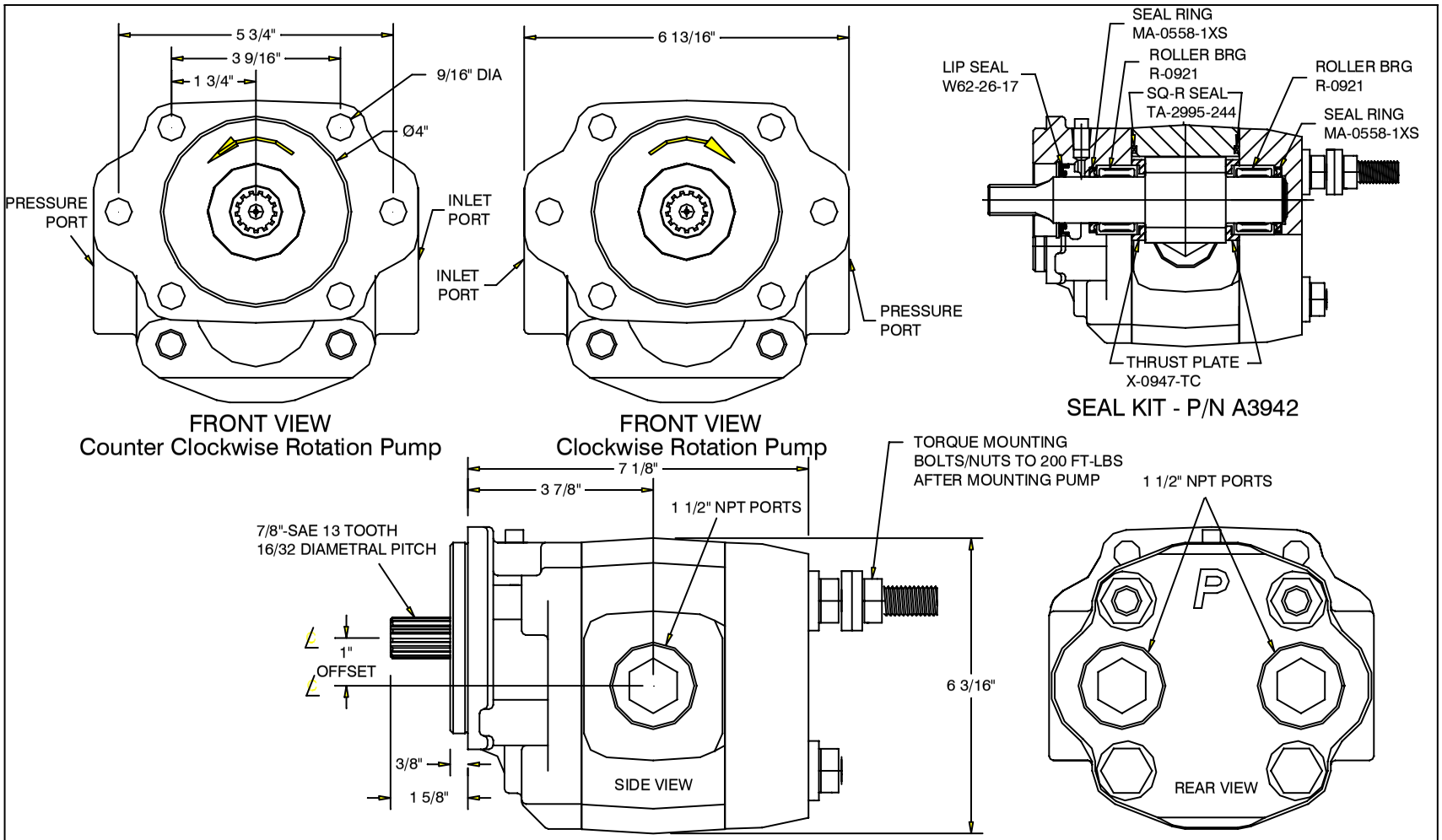
SCALE	1/3" = 1"
BY	HMK
DATE	01/05/00

HOISTS H1
DRIVE LINE PUMP, P/N 8683

35 GPM @ 1500 RPM w/ 1 1/4" SHAFT

BOOK NO. 18

NO. IS4406



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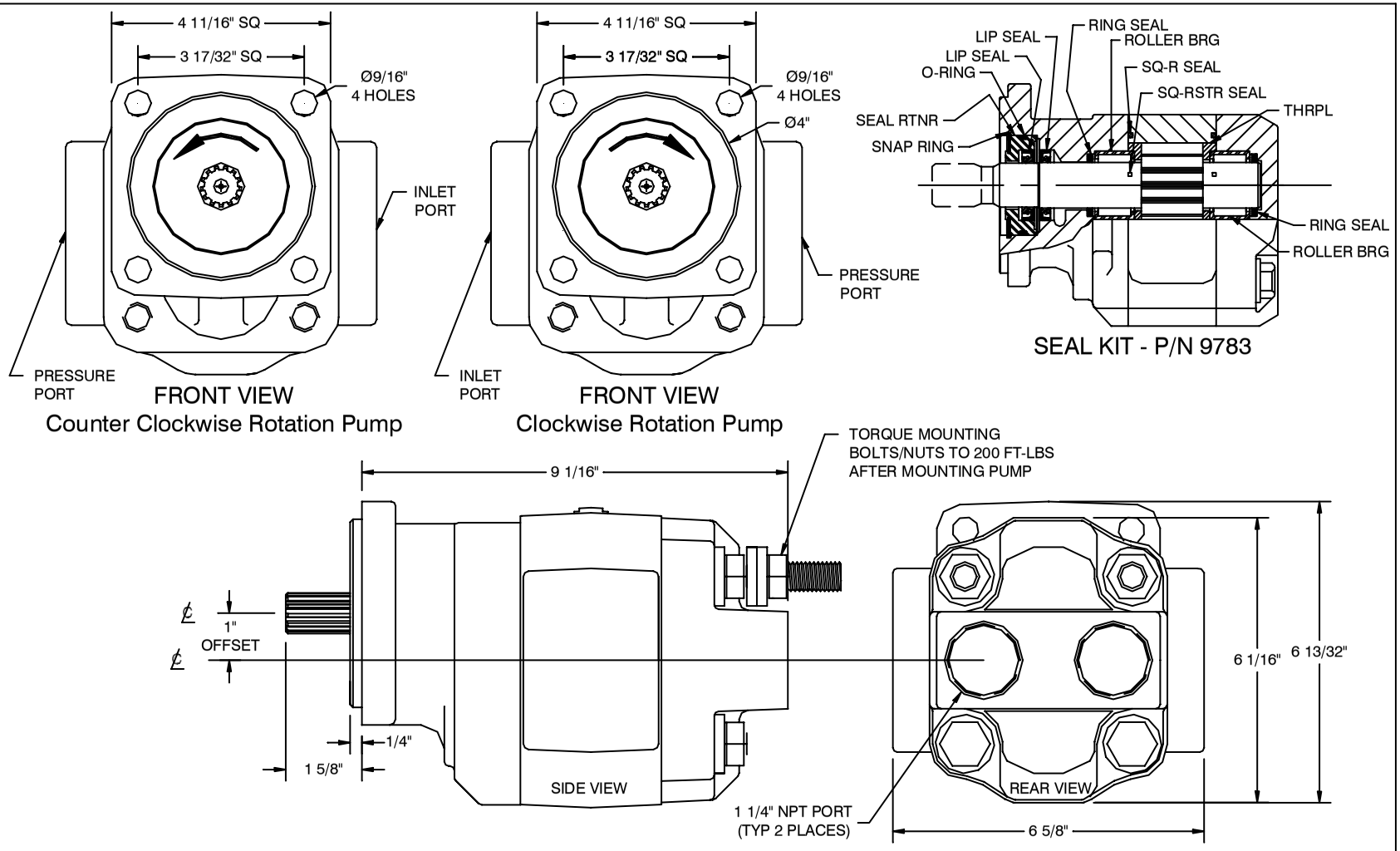
			REF.							DXF

			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING SCALE 1/3" = 1" BY GEORGE DATE 8/1/02	HOISTS H1 DIRECT MOUNT PUMP, P/N A3789 35 GPM @ 1500 RPM	BOOK NO. 18 NO. IS5587
ECN DATE	NO.	BY				



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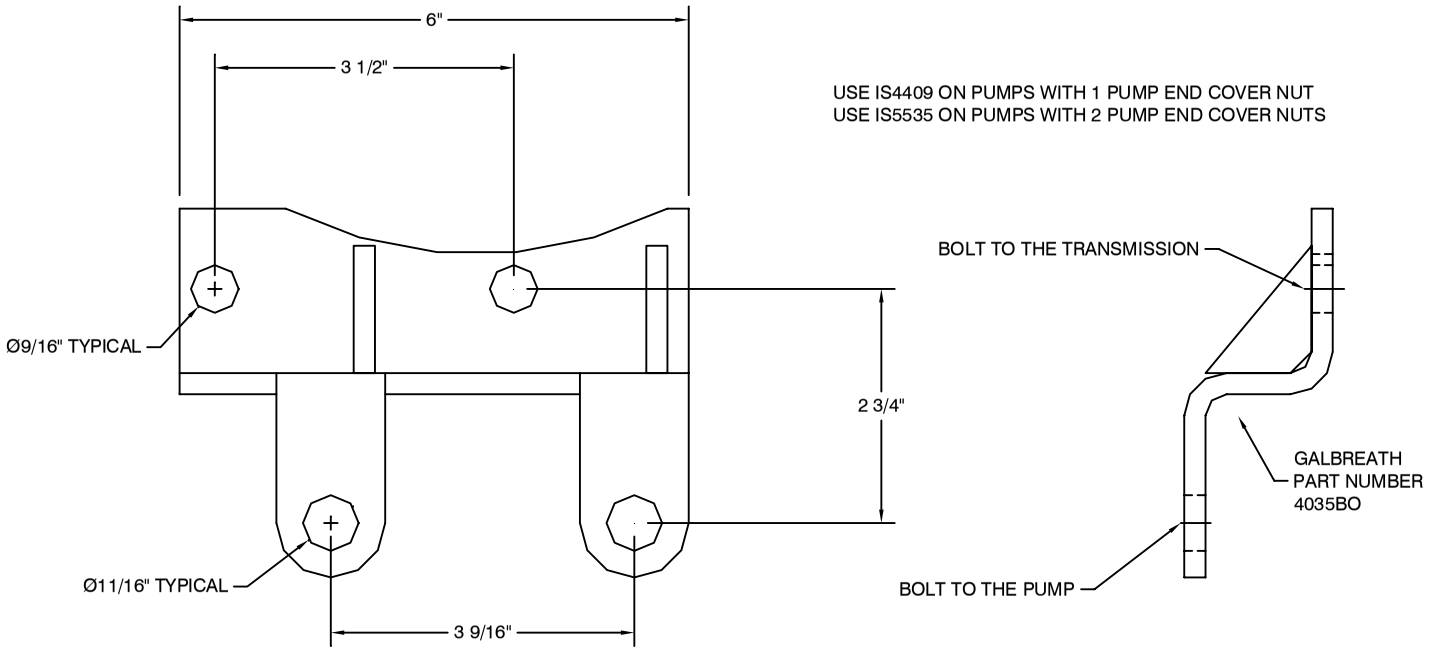
			REF.									DXF	
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING		HOISTS H1				BOOK NO.	18	
					SCALE	1/3" = 1"	DIRECT MOUNT PUMP, P/N A1643						
					BY	JJD					NO.	IS5790	
ECN DATE	NO.	BY			DATE	12/05/02	35 GPM @ 1500 RPM						



TYPICAL DIRECT MOUNT PUMP MOUNTING BRACKET
for
MACK TRANSMISSIONS T2060 & T2090

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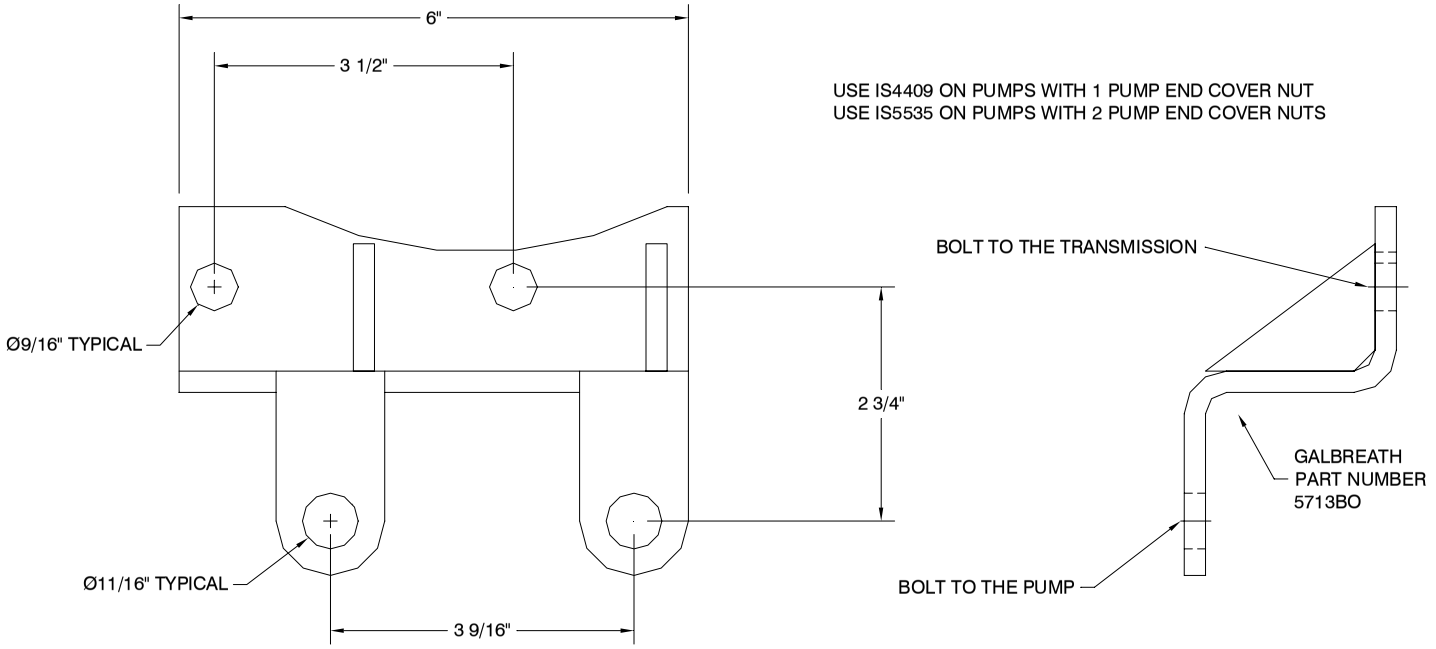
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING		HOISTS H1 PUMP/TRANSMISSION BRACKET MACK T2060 & T2090		BOOK NO. 18	
					SCALE 1/2" = 1"					
					BY HMK				NO. IS4409	
ECN DATE	NO.	BY			DATE 01/05/00					



TYPICAL DIRECT MOUNT PUMP MOUNTING BRACKET
for
MACK TRANSMISSIONS T2060 & T2090

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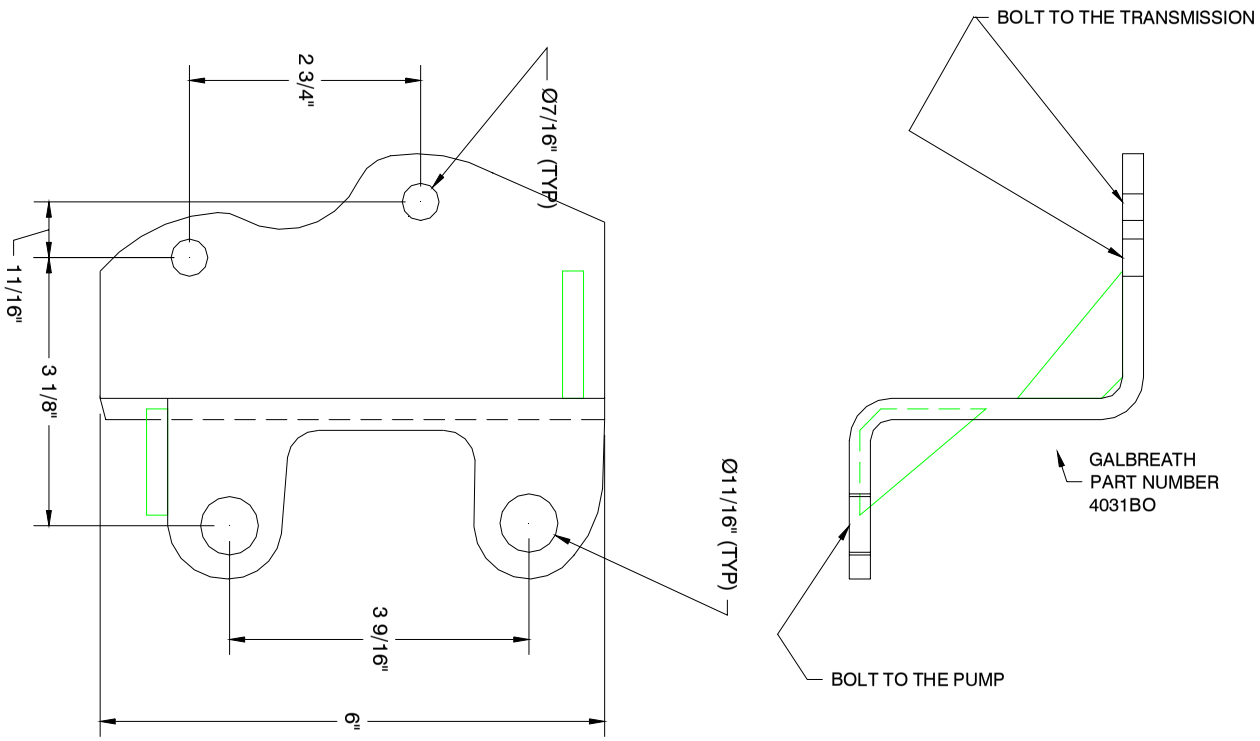
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H1 PUMP/TRANSMISSION BRACKET					BOOK NO. 18	
				SCALE 1/2" = 1"							
				BY JJD						NO. IS5535	
ECN DATE	NO.	BY		DATE 05/23/02	MACK T2060 & T2090						



TYPICAL DIRECT MOUNT PUMP MOUNTING BRACKET
for
FULLER TRANSMISSION RXT 14710C

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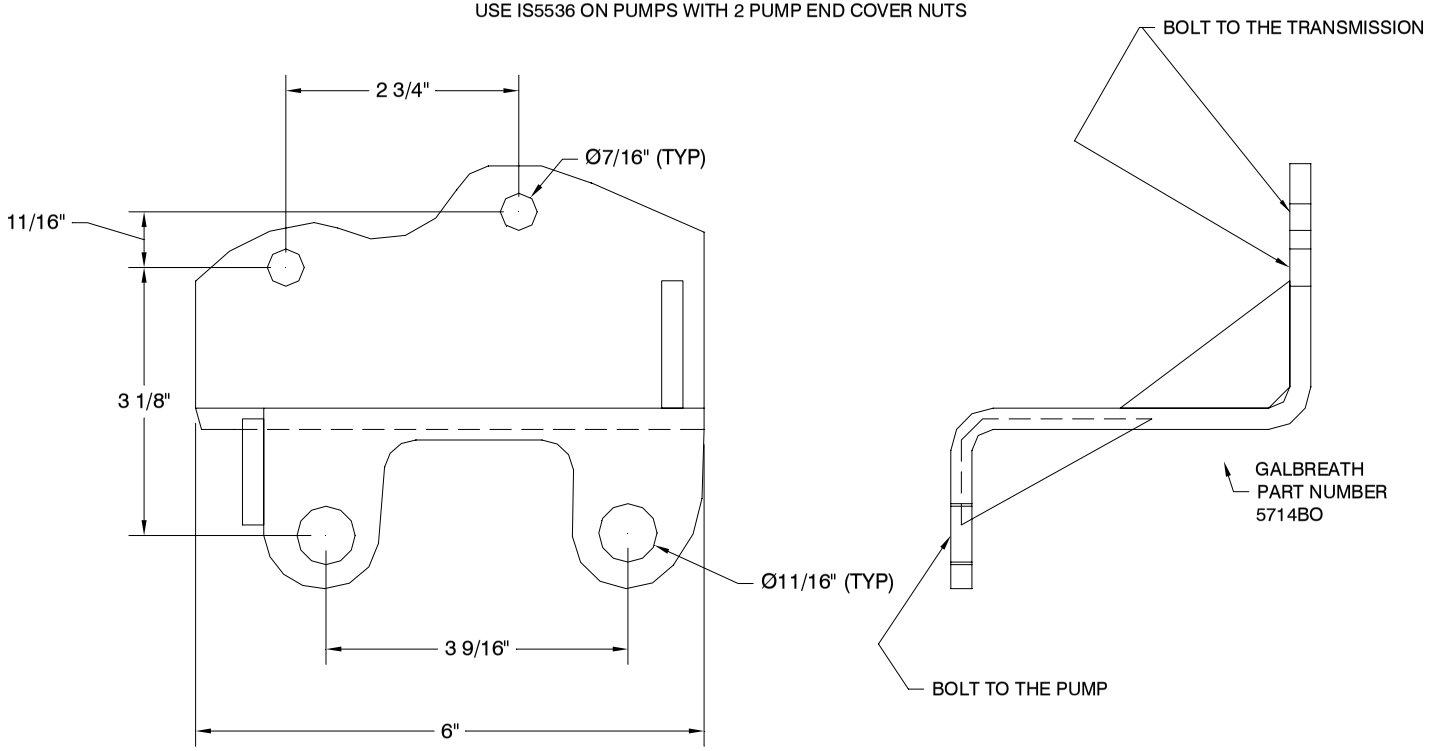
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING		HOISTS H PUMP/TRANSMISSION BRACKET			BOOK NO. 18	
					SCALE 1/2" = 1"						
					BY HMK						
ECN DATE	NO.	BY			DATE 01/06/00		FULLER RTX14710C			NO. IS4411	

USE IS4411 ON PUMPS WITH 1 PUMP END COVER NUT
USE IS5536 ON PUMPS WITH 2 PUMP END COVER NUTS



TYPICAL DIRECT MOUNT PUMP MOUNTING BRACKET
for
FULLER TRANSMISSION RXT 14710C

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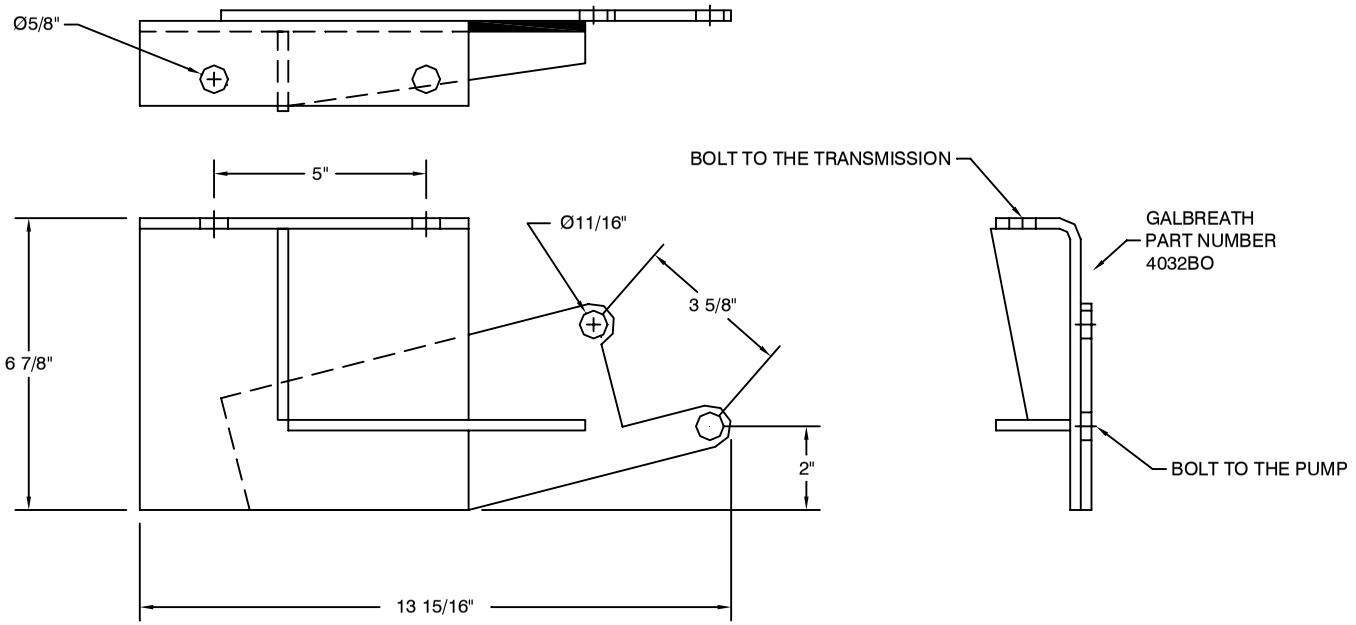
			REF.									DXF
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING		HOISTS H PUMP/TRANSMISSION BRACKET				BOOK NO.	18
					SCALE	1/2" = 1"						
					BY	JJD					NO.	IS5536
ECN DATE	NO.	BY			DATE	05/23/02	FULLER RTX14710C					

USE IS4410 ON PUMPS WITH 1 PUMP END COVER NUT
USE IS5537 ON PUMPS WITH 2 PUMP END COVER NUTS



TYPICAL DIRECT MOUNT PUMP MOUNTING BRACKET
for
ALLISON TRANSMISSION HT740RS

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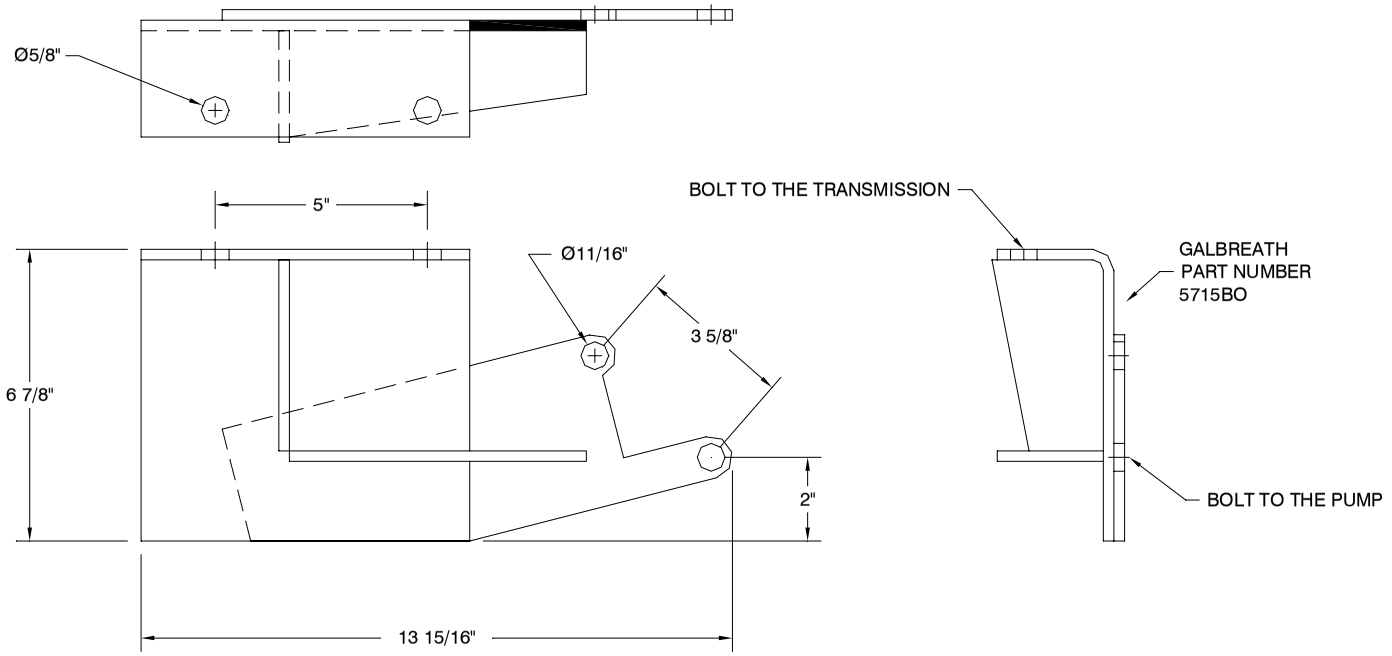
			REF.								DXF

			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H PUMP/TRANSMISSION BRACKET ALLISON HT740RS TRANSMISSION	BOOK NO. 18
				SCALE 1/4" = 1"		
				BY HMK		NO. IS4410
ECN DATE	NO.	BY		DATE 01/05/00		

USE IS4410 ON PUMPS WITH 1 PUMP END COVER NUT
USE IS5537 ON PUMPS WITH 2 PUMP END COVER NUTS



TYPICAL DIRECT MOUNT PUMP MOUNTING BRACKET
for
ALLISON TRANSMISSION HT740RS

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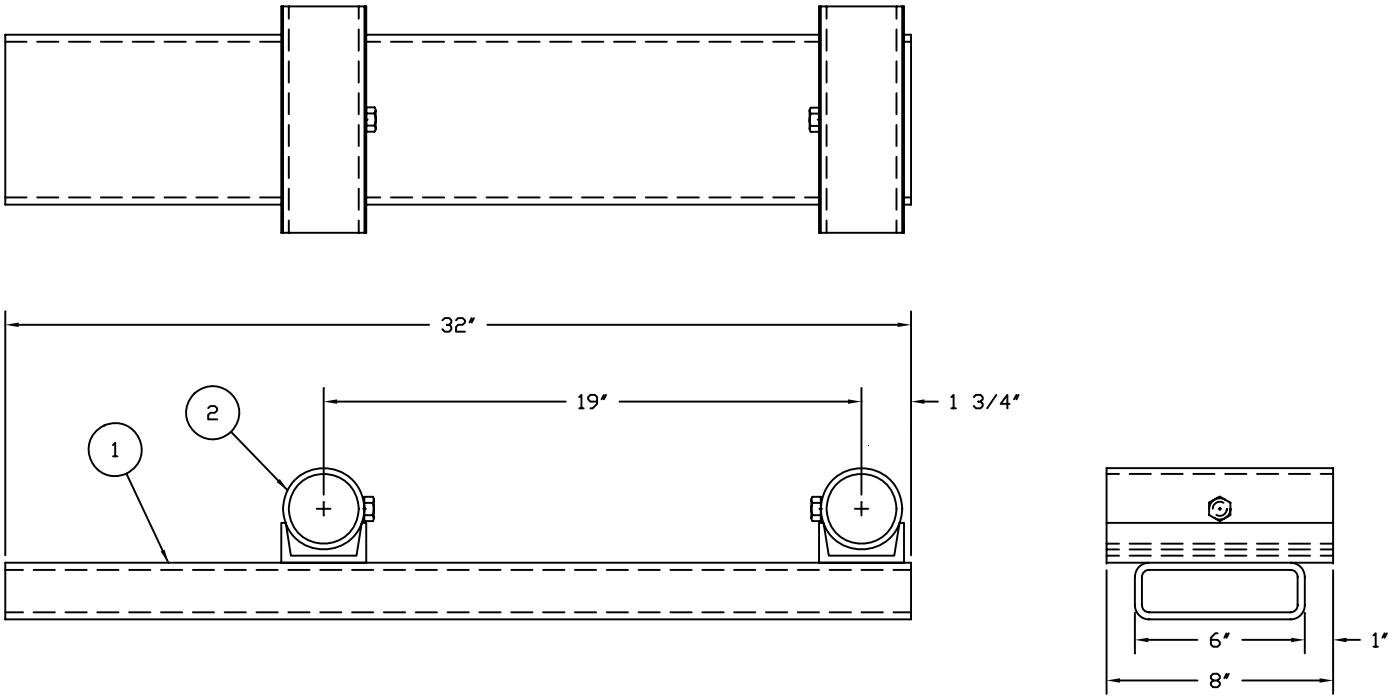
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING		HOISTS H PUMP/TRANSMISSION BRACKET		BOOK NO. 18		
					SCALE 1/4" = 1"						
					BY JJD				NO. IS5537		
ECN DATE	NO.	BY			DATE 05/23/02		ALLISON HT740RS TRANSMISSION				

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	6X2X1/4 [JC 32	25RTC62-32	1	32	-
2	MOUNTING BRACKET	3377W	2	14	-

TOTAL WT.= 46#



R4-UPDATED TO NEW PART NO. SYS.
R3-DRAWN ON CAD NO CHANGE

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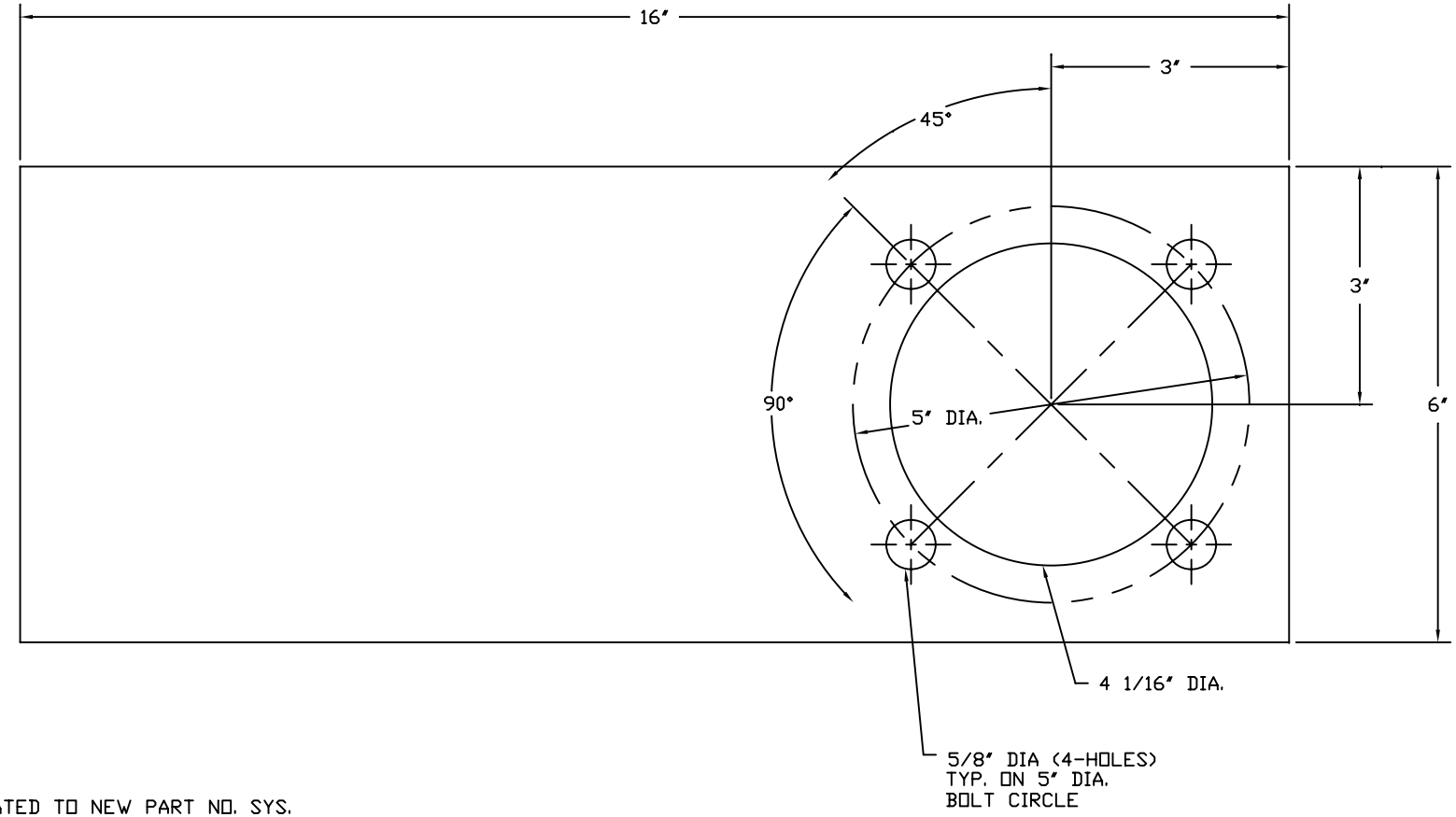
			REF. 4228A0	0160B0							DXF

			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H PUMP MOUNTING BRACKET for DRIVE LINE TYPE PUMP
05/04/95	R4	JWR		SCALE 1/6″=1″	BOOK NO. 12C
10/23/89	R3	GB		BY GEORGE	NO. 2259W
ECN DATE	NO.	BY		DATE 11/18/84	

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	1/2X6 A36 16	50A36-6-16	1	10	116



R3-UPDATED TO NEW PART NO. SYS.
R2-DRAWN ON CAD NO CHANGE

for DRIVE LINE TYPE PUMP

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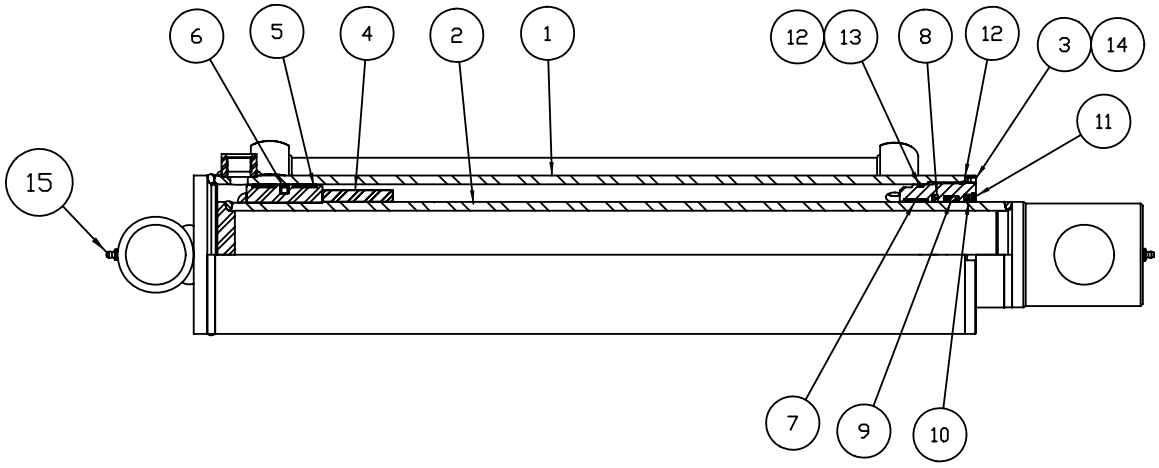
			REF. 4228A0	0160B0	AH273					DXF
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H PUMP MOUNTING BRACKET HOISTS SAE B 4 BOLT FLANGE				BOOK NO. 20C	
05/04/95	R3	JWR		SCALE 1/2″=1″					NO. A774	
6/13/89	R2	GB		BY TOMINE						
ECN DATE	NO.	BY		DATE 8/18/80						

HYDRAULIC CYLINDER A3137

6" BORE, 4 1/2" ROD, 72" STROKE



NO.	DESCRIPTION	PART NO.	QTY
1	BARL ASSEMBLY, 6.75 O.D.	*	1
2	PLUN ASY, 4.50, PLATED	*	1
3	GLAND	*	1
4	SPACER	*	2
5	WEAR RING,6.00X5.75X1.00,PISTON	*	2
6	PISTON SEAL,6.00X.38,K30T BRZ	*	1
7	WEAR RING,4.75X4.50X1.00,GLAND	*	1
8	BUFFER RING	*	1
9	LIP SEAL,5.00X4.50X.56	*	1
10	WIPER, CANNED	*	1

NO.	DESCRIPTION	PART NO.	QTY
11	RET RING,INT	*	1
12	O-RING,6.00X5.75XARP-256,90DU	*	2
13	BU RING,6.00X5.75,ARP-255,90DU	*	1
14	SCREW,SET,SOCHD,.25-20X.25 LG	*	1
15	FITTING,GREASE,.12 NPT,STR	*	2

SEAL KIT NO. A3138 INCLUDES ITEMS (5,7,8,9,10,11,12, & 13)

* MUST SPECIFY CYLINDER BORE, STROKE, AND PART NUMBER.
MUST SPECIFY SERIAL NO. OF CYLINDER

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REF.				PAGE 1 OF 1

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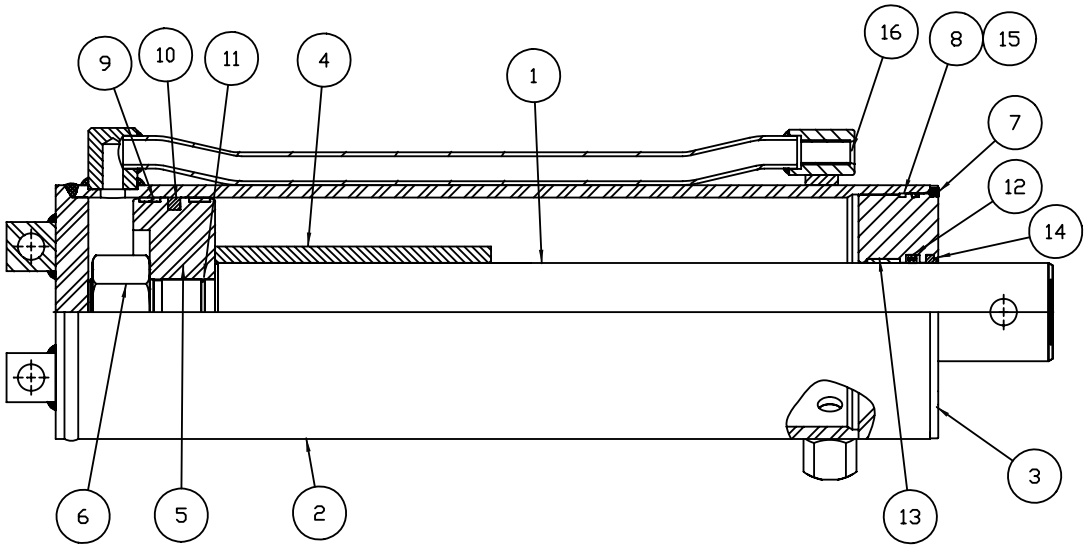
CHANGE DESCRIPTION	ECN DATE	NO.	BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING	HOISTS H1	BOOK NO.
SCALE 1" = 1"	HYDRAULIC CYLINDER A3137	18
BY HMK	HOISTS	NO. IS4547
DATE 12/10/02		

HYDRAULIC CYLINDER

A3145 - 7" BORE, 3" ROD, 75" STROKE
A3147 - 7" BORE, 3" ROD, 80" STROKE
A3149 - 7" BORE, 3" ROD, 90" STROKE
A3143 - 7" BORE, 3" ROD, 108" STROKE



NO.	DESCRIPTION	PART NO.	QTY
1	ROD	*	1
2	BARREL ASSEMBLY	*	1
3	GLAND	*	1
4	SPACER	*	1
5	PISTON	*	1
6	LOCK NUT	*	1
7	SET SCREW	*	1
8	O RING	*	1
9	WEAR RING	*	2
10	PISTON SEAL	*	1

NO.	DESCRIPTION	PART NO.	QTY
11	O RING, PISTON	*	1
12	ROD SEAL	*	1
13	WEAR RING	*	1
14	ROD WIPER	*	1
15	BACKUP RING	*	1
16	PLUG	*	3
17			
18			
19			

SEAL KIT NO. A3148 INCLUDES ITEMS (8,9,10,11,12,13,14 & 15)

* MUST SPECIFY CYLINDER BORE. STROKE, AND PART NUMBER.
MUST SPECIFY SERIAL NO. OF CYLINDER

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CHANGE DESCRIPTION	ECN DATE	NO.	BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

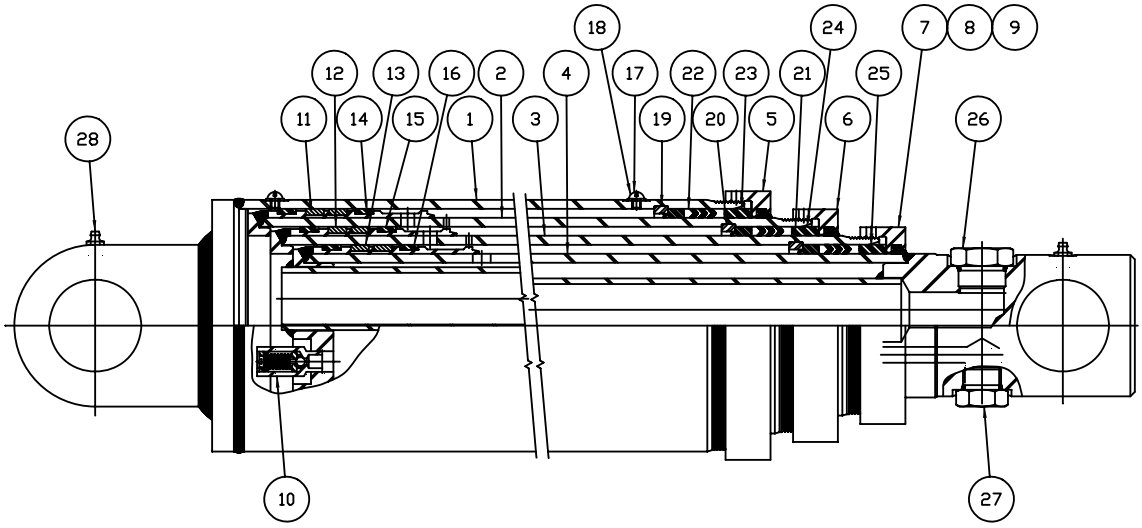
DO NOT SCALE DRAWING	
SCALE	1" = 1"
BY	HMK
DATE	5/31/00

HOISTS H1
HYDRAULIC CYLINDER
HOISTS

BOOK NO.	18
NO.	IS4549

HYDRAULIC CYLINDER A3383

6-5-4 X 118" STROKE



NO.	DESCRIPTION	PART NO.	QTY
1	BARREL ASSEMBLY 7.03 dia.	*	1
2	SLEEVE ASSEMBLY 6.00 dia.	*	1
3	SLEEVE ASSEMBLY 5.00 dia.	*	1
4	PLUNGER ASSEMBLY 4.00 dia.	*	1
5	GLAND RET 6.94-12 THRD WIPER	*	1
6	GLAND RET 5.94-12 THRD WIPER	*	1
7	GLAND RET 4.94-12 THRD WIPER	*	1
8	SCREW, SET .312-24 x.31 lg	*	3
9	SLUG, NYLON, 1/4x1/8	*	3
10	VALVE, RELIEF	*	1
11	PISTON RING	*	2
12	PISTON RING	*	2
13	PISTON RING	*	2
14	WEAR RING	*	2
15	WEAR RING	*	2
16	WEAR RING	*	2
17	VALVE, GASKET, BLEEDER	*	2

NO.	DESCRIPTION	PART NO.	QTY
18	VALVE, GASKET, BLEEDER	*	2
19	RETAINER RING, INT	*	1
20	RETAINER RING, INT	*	1
21	RETAINER RING, INT	*	1
22	KIT, BLD,PACK, WIPER	*	1
23	GUIDE RING, TOP, NYLON	*	1
24	GUIDE RING, TOP, NYLON	*	1
25	GUIDE RING, TOP, NYLON	*	1
26	PLUG,SAE No.16(1 5 /16-12)HEX HD	*	1
27	PLUG,SAE No.16(1 1 /16-12)HEX HD	*	1
28	FITTING,GREASE,1/8 NPT STR	*	2
29	SETSCREW, 1/4-20	*	1

*

SEAL KIT NO. A3384 INCLUDES ITEMS (11,12,13,14,15,16,22,23,24 & 25)

* MUST SPECIFY CYLINDER BORE. STROKE, AND PART NUMBER.
MUST SPECIFY SERIAL NO. OF CYLINDER

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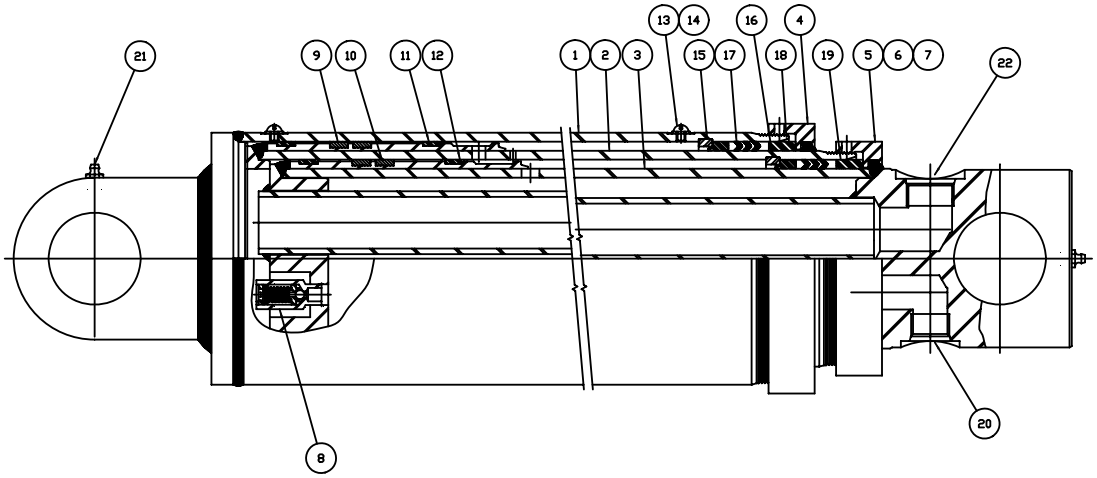
CHANGE DESCRIPTION	ECN DATE	NO.	BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING	HOISTS H1	BOOK NO.
SCALE 1" = 1"	HYDRAULIC CYLINDER A3383	18
BY GEORGE	HOISTS	NO.
DATE 8/3/01		IS5098

HYDRAULIC CYLINDER A3377

6-5 X 114" STROKE



NO.	DESCRIPTION	PART NO.	QTY
1	BARREL ASSEMBLY, 7.00 dia.	*	1
2	SLEEVE ASSEMBLY, 6.00 dia.	*	1
3	PLUNGER ASSEMBLY, 5.00 dia.	*	1
4	GLAND, RET, 6.94-12 THRD, WIPER	*	1
5	GLAND, RET, 5.94-12 THRD, WIPER	*	1
6	SCREW, SET, .312-24 x.31 lg	*	2
7	SLUG, NYLON, 1/4 x 1/8	*	2
8	VALVE, RELIEF	*	1
9	PISTON RING	*	2
10	PISTON RING	*	2
11	WEAR RING	*	2
12	WEAR RING	*	2

NO.	DESCRIPTION	PART NO.	QTY
13	VALVE, GASKET, BLEEDER	*	2
14	VALVE, SCREW, BLEEDER	*	2
15	RET RING, INT	*	1
16	RET RING, INT	*	1
17	KIT, BLD,PACK, WIPER	*	1
18	GUIDE RING, TOP, NYLON	*	1
19	GUIDE RING, TOP, NYLON	*	1
20	PLUG, SAE No.12(1.06-12)HEX HD	*	1
21	FITTING,GREASE,1/8 NPT STR	*	2
22	PLUG, SAE No.16(1.31-12)HEX HD	*	1
23	KIT, LABEL	*	1

SEAL KIT NO. A3168 INCLUDES ITEMS (9,10,11,12,17,18 & 19)

* MUST SPECIFY CYLINDER BORE. STROKE, AND PART NUMBER. MUST SPECIFY SERIAL NO. OF CYLINDER

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REF.				PAGE 1 OF 1

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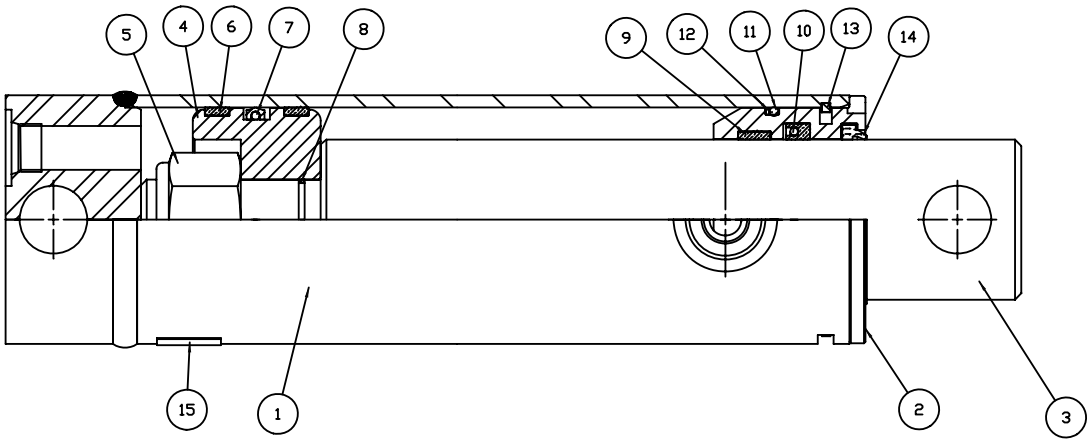
CHANGE DESCRIPTION	ECN DATE	NO.	BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING	HOISTS H1	BOOK NO.
SCALE 1" = 1"	HYDRAULIC CYLINDER A3377	18
BY GEORGE	HOISTS	NO.
DATE 8/3/01		IS5099

HYDRAULIC CYLINDER

A3089 - 3 1/2X2 1/2 X 60" STROKE
A3091 - 3 1/2X2 1/2 X 80" STROKE



NO.	DESCRIPTION	PART NO.	QTY
1	TUBE ASSEMBLY	*	1
2	GLAND	*	1
3	ROD	*	1
4	PISTON	*	1
5	LOCKNUT	*	1
6	WIPER RING	*	2
7	PISTON SEAL	*	1
8	ROD O RING	*	1
9	WEAR RING	*	1
10	U-CUP, ROD SEAL	*	1
11	BACKUP GLAND O.D.	*	1
12	O RING	*	1
13	LOCK WIRE	*	1
14	WIPER RING	*	1
15	NAME PLATE	*	1

SEAL KIT NO. 3092 INCLUDES ITEMS (6,7,8,9,10,11,12,13 & 14)

* MUST SPECIFY CYLINDER BORE. STROKE, AND PART NUMBER. MUST SPECIFY SERIAL NO. OF CYLINDER

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CHANGE DESCRIPTION	ECN DATE	NO.	BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

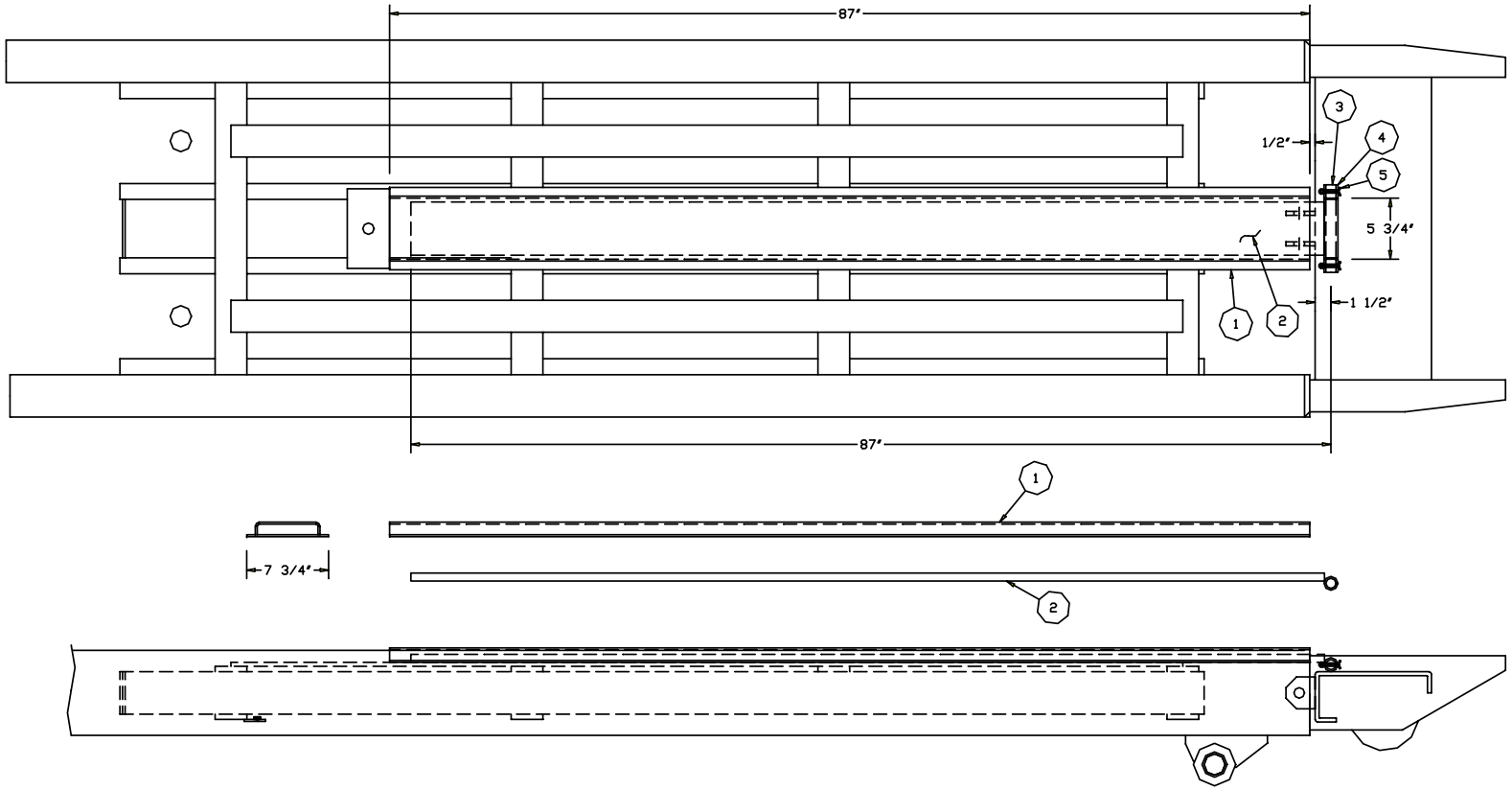
DO NOT SCALE DRAWING	
SCALE	1" = 1"
BY	HMK
DATE	6/02/00

HOISTS H1
HYDRAULIC CYLINDER
HOISTS

BOOK NO.	18
NO.	IS4552

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	TRACK WELDMENT	3052W	1	70	-
2	COVER WELDMENT	3053W	1	93	-
3	PIN	G489	1	1.2	-
4	COLLAR	G490	2	1	-
5	COT PIN,, 1/4X2	25KP-200	2		-

TOTAL WT. = 165.20 lbs



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COVERED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS:

REF.

DXF

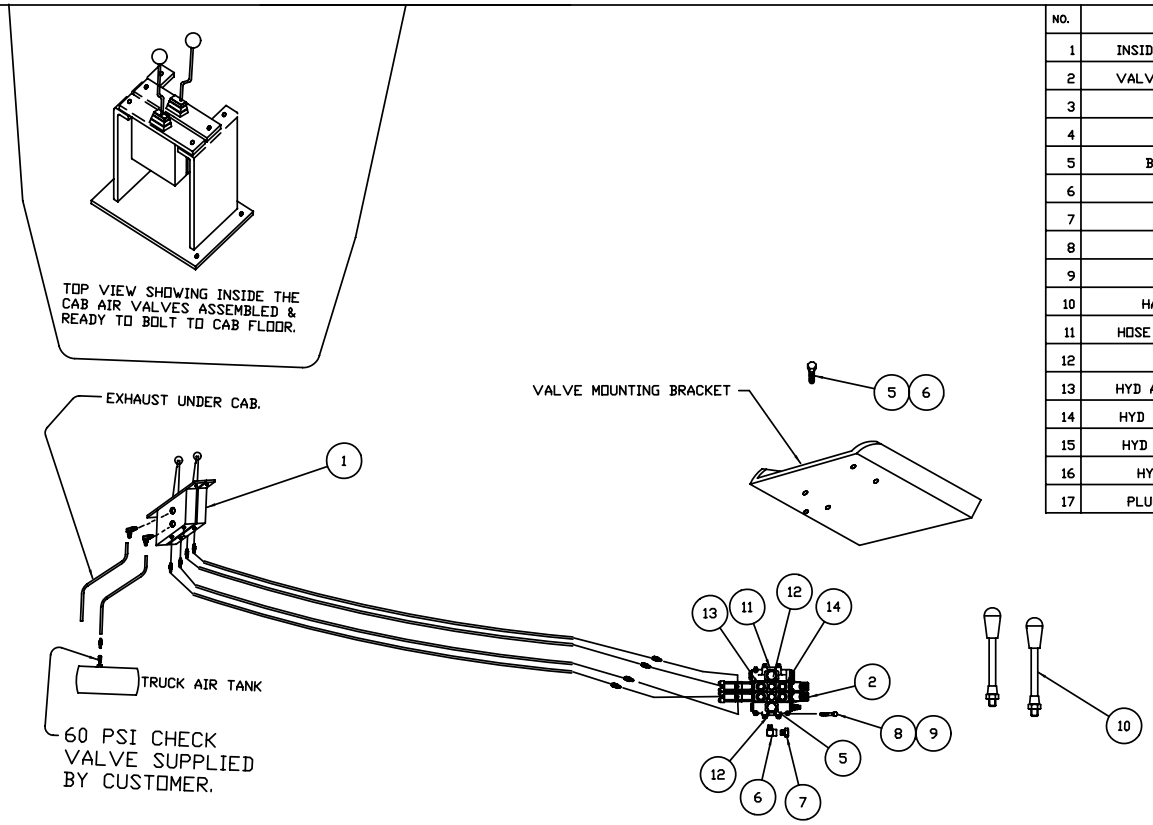
R2 REDRAWN ON CAD	05/18/98	R2	GB
R1 NO. 4 WAS CLEVIS EAR, 5 WAS 1153, 6 WAS 2673	4/12/88	R1	GB
	ECN DATE	NO.	BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/10" = 1"
BY D.L.B.
DATE 3/18/88

HOISTS H1
ROD PROTECTOR
EX-174/194 HOISTS

BOOK NO. 12
NO. 6944A0



NO.	DESCRIPTION	PART NO.	QTY	WT	
1	INSIDE THE CAB AIR CONTROLS	4597BD	1	10	-
2	VALVE,2 SPOOL ML W/AIR HYD	A3205	1	-	9755
3					
4					
5	BOLT, 1/2-13X1 1/2 G5	50B13G5-150	4	1	1199
6	LOCKNUT, 1/2-13 G5	50LN13G5	4	-	1196
7					-
8	LOCKNUT, 3/8-16 G5	38LN16G5	4	-	1166
9	BOLT, 3/8-16X4 G5	38B16G5-400	4	1	1173
10	HANDLE, 40 GPM VALVE	A3215	2	-	1812
11	HOSE BARB 90L 1 1/4HB - 1MD	BR4601-20-16	1	-	7023
12	HYD PLUG,1MD W/D	BR6408-16-D	2	-	3344
13	HYD ADP,3/4MD-3/4FP SW W/D	BR6900-12-12-D	4	-	3339
14	HYD ADP,45L,3/4MP-3/4FP SW	BR1503-12-12	4	-	3341
15	HYD ADP,45L,1MD-1FP SW N/D	BR6902-16-16NWD	1	-	3419
16	HYD ADP,90L,1/4MP-1/4FP	BR5502-04-04	1	-	3757
17	PLUG,1/4" HEX SOCKET PIPE	4251	1	-	

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COVERED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS:
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REF. 6994AD

DXF

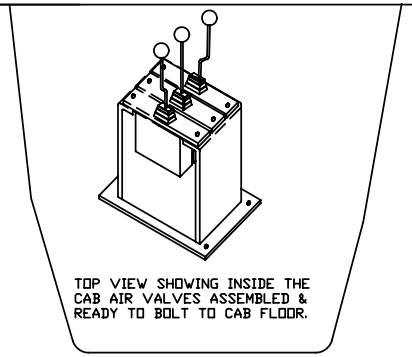
	ECN DATE	NO.	BY
R3 ITEM 1 WAS 0388BD	03/01/04	R3	GB
R2 ITEM 3 WAS K923, 4 WAS 10S4 11.5	11/13/00	R2	GB
UPDATED TO NEW PART NO. SYSTEM	06/27/00	R1	GB

GALBREATH
INCORPORATED
WINAMAC, INDIANA

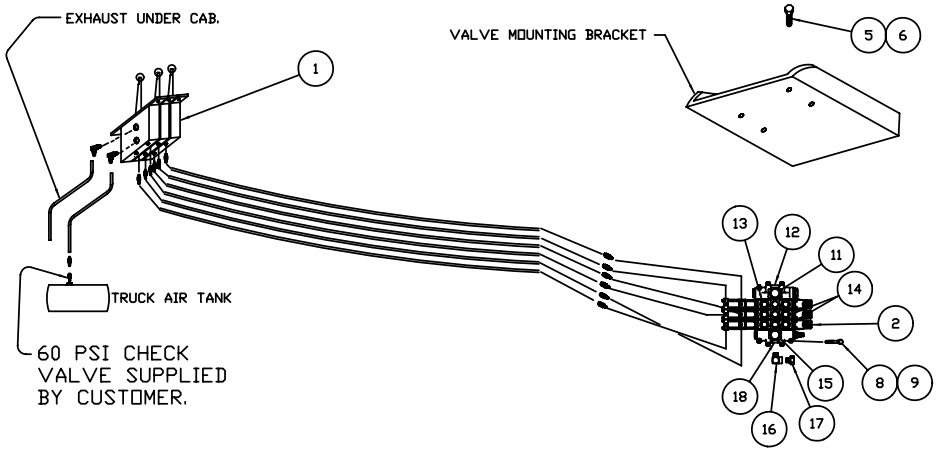
DO NOT SCALE DRAWING
SCALE 1/20' = 1'-
BY GEORGE
DATE 6/29/99

HOISTS H
AIR ACTUATED INSIDE CONTROLS
FOR TILT CAB
(2-SPOOL VALVE)

BOOK NO. 18
NO. IS4167



TOP VIEW SHOWING INSIDE THE CAB AIR VALVES ASSEMBLED & READY TO BOLT TO CAB FLOOR.



NO.	DESCRIPTION	PART NO.	QTY	WT	
1	INSIDE THE CAB AIR CONTROLS	0387B0	1	16	-
2	VALVE,3 SPOOL ML W/AIR HYD	A3204	1	-	9597
3					
4					
5	BOLT, 1/2-13X1 1/2 G5	50B13G5-150	4	1	1199
6	LOCKNUT, 1/2-13 G5	50LN13G5	4	-	1196
7					-
8	LOCKNUT, 3/8-16 G5	38LN16G5	4	-	1166
9	BOLT, 3/8-16X4 G5	38B16G5-400	4	1	1173
10	HANDLE, 40 GPM VALVE	A3215	3	-	1812
11	HYD ADP, 1 1/4 BRB X 1 OR M	7023	1	-	-
12	OR PLUG 1"	BR6408-16-O	1	-	3344
13	HYD ADP, 3/4MO-3/4FP SW OR	BR6900-12-12-O	6	-	3339
14	HYD ADP, 45L, 3/4MP-3/4FP SW	BR1503-12-12	6	-	3341
15	HYD ADP, 45L, 1MO-1FP SW NOR	BR6902-16-16-NWO	1	-	3419
16	HYD ADP, 90L, 1/4MP-1/4FP	BR5502-04-04	1	-	3757
17	HEX SOCKET P PLUG 1/4	4251	1	-	-
18	"O" RING PLUG 1"	F816	1	1	-

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REF. 6995A0

DXF

	ECN DATE	NO.	BY
R2 ITEM 1 WAS 0387B0	03/01/04	R2	GB
R1 ITEM 3 WAS AB822, 4 WAS 10S4 11.5	11/13/00	R1	GB

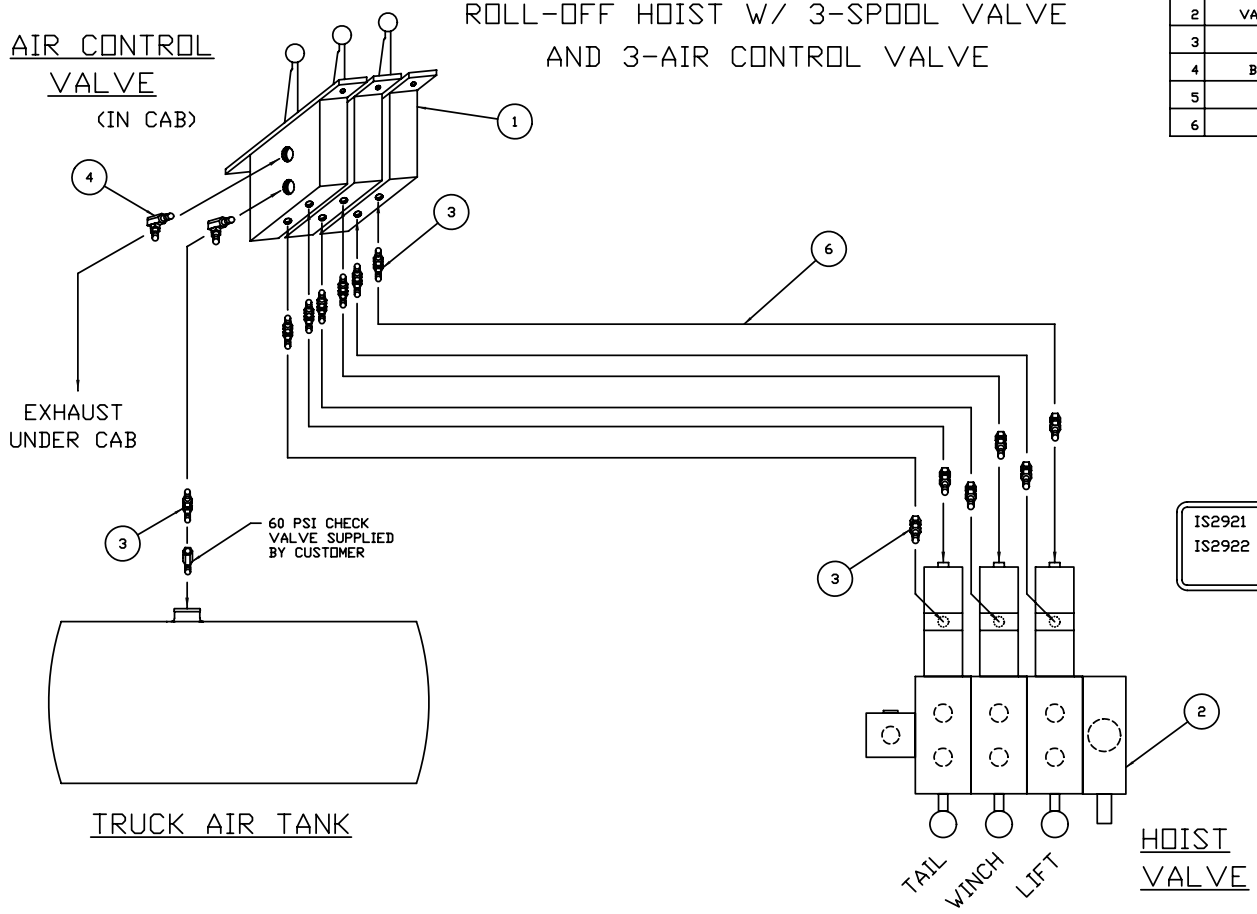
Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/20' = 1'-
BY GEORGE
DATE 6/29/99

HOISTS H
AIR ACTUATED INSIDE CONTROLS
HOISTS
CONVENTIONAL CAB (3-SPOOL VALVE)

BOOK NO. 18
NO. IS4168

TYPICAL AIR SYSTEM
ROLL-OFF HOIST W/ 3-SPOOL VALVE AND 3-AIR CONTROL VALVE



NO.	DESCRIPTION	PART NO.	QTY	WT
1	VALVE,3 SPOOL ML AIR CONTROL	A3207	1	
2	VALVE,3 SPOOL ML W/AIR HYD	A3204	1	
3	BRSS CONN,1/4CT-1/8MP	6157	13	
4	BRSS FIT, 90L, 1/4CT-1/8MP	6174	2	
5				
6	AIR LINE TUBING	7293	8	

IS2921 AIR SYS. (3-SPOOL VALVE + 2-AIR VALVE)
IS2922 AIR SYS. (3-SPOOL VALVE + 3-AIR VALVE)

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REF. ZK-E7 DXF

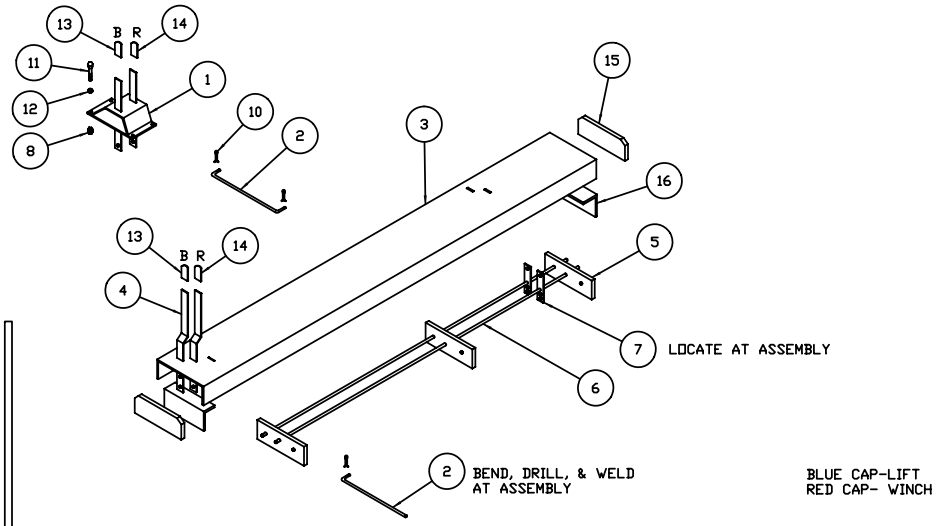
R1 ITEM 3 WAS QTY 9, 4 WAS QTY 5, ITEM 5 WAS 6158	06/27/00	R1	GB
	ECN DATE	NO.	BY

GALBREATH INCORPORATED WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE N/A
BY LES
DATE 02/05/98

HOISTS H1
AIR SYSTEM, TYPICAL ROLL-OFF
ROLL-OFF HOISTS
3-SPOOL VALVE AND 3-AIR VALVE

BOOK NO. 18
NO. IS2922

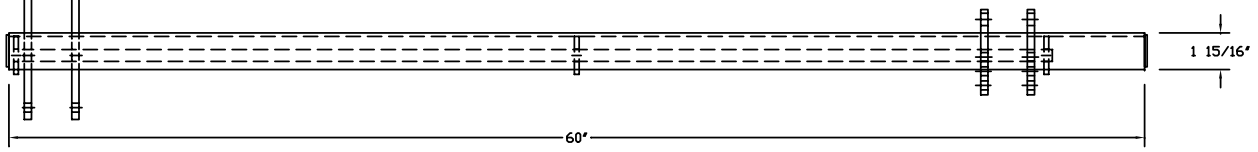


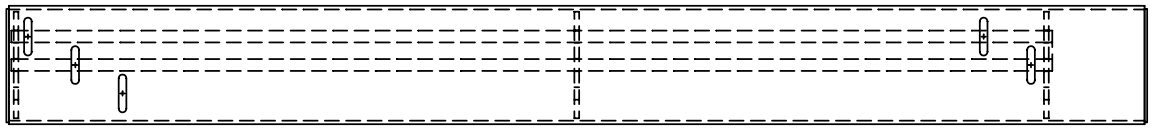
BLUE CAP-LIFT
RED CAP- WINCH

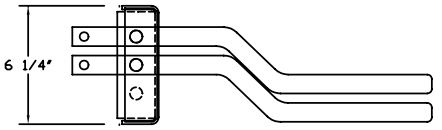
NO.	DESCRIPTION	PART NO.	QTY	WT	
1	HANDLE ASSEMBLY	3727AD	2	7	-
2	7/16 RD C1018 32	44RDC18-32	4	11	-
3	COVER PLATE	500	1	30	-
4	HANDLE	B799	2	4	-
5	PIVOT PLATE	501	3	4	-
6	5/8 RD C1018 55	63RDC18-55	2	10	-
7	LINK	502	2	1	-
8	LOCKNUT, 5/16-18 G5	31LN18G5	4		2673
9					-
10	COT PIN, 3/32X1 1/4	09KP-125	6		
11	BOLT, 5/16-18X1 1/2 G5	31B18G5-150	4	1	1153
12	WASHER, 5/16 G5 USS	31WG5USS	4	-	1150
13	CAP BLUE CONTROL HANDLE	4364	2		-
14	CAP RED CONTROL HANDLE	4365	2		-
15	END CAP	J614	2	1	-
16	4X4X1/4 LA36 8	25LA3640408	2	9	-
17	BOLT, 5/16-24X1 1/2 G5	31B24G5-150	2		-
18	NUT, 5/16-24 G5	31N24G5	2		-

NOTE: ITEMS 17 & 18 USED TO CONNECT YOKES TO VALVE

TOTAL WT. = 78.00 lbs







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REF. 5195AD

DXF

ECN	DATE	NO.	BY

GALBREATH
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WINAMAC, INDIANA

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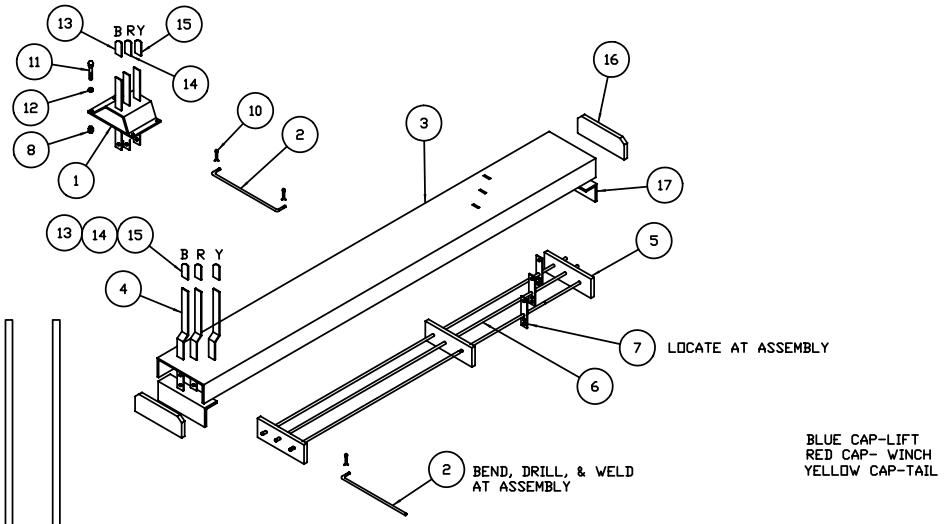
SCALE 1/6" = 1"
BY GEORGE
DATE 6/28/99

HOIST H1
INSIDE CONTROLS
HOIST CONVENTIONAL CAB
2-SPOOL VALVE

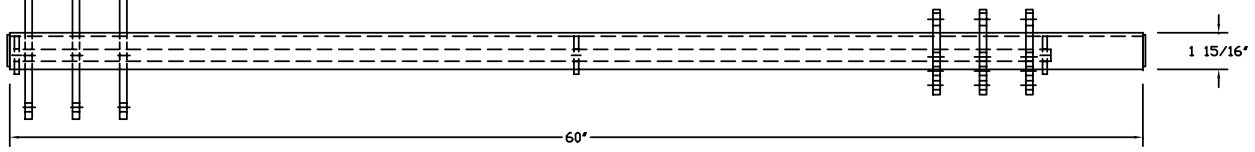
BOOK NO. 18
NO. IS4165

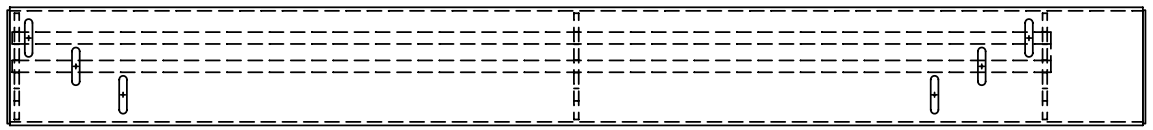


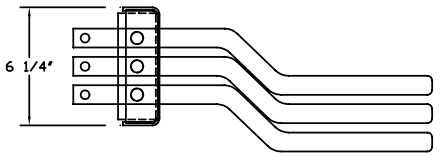
NO.	DESCRIPTION	PART NO.	QTY	WT	
1	HANDLE ASSEMBLY	3423AD	1	11	-
2	7/16 RD C1018 32	44RDC18-32	6	8	-
3	COVER PLATE	500	1	30	-
4	HANDLE	B799	3	6	-
5	PIVOT PLATE	501	3	4	-
6	5/8 RD C1018 55	63RDC18-55	3	15	-
7	LINK	502	3	1	-
8	LOCKNUT, 5/16-18 G5	31LN18G5	4		2673
9					-
10	COT PIN, 3/32X1 1/4	09KP-125	9	-	3103
11	BOLT, 5/16-18X1 1/2 G5	31B18G5-150	4	1	1153
12	WASHER, 5/16 G5 USS	31WG5USS	4	-	1150
13	CAP BLUE CONTROL HANDLE	4364	2		-
14	CAP RED CONTROL HANDLE	4365	2		-
15	CAP YELLOW CONTROL HANDLE	4366	2		-
16	END CAP	J614	2	1	-
17	4X4X1/4 LA36 8	25LA3640408	2	9	-
18	BOLT, 5/16-24X1 1/2 G5	31B24G5-150	3		-
19	NUT, 5/16-24 G5	31N24G5	3		-

TOTAL WT. = 86.00 lbs

NOTE: ITEMS 18 & 19 USED TO CONNECT YOKES TO VALVE







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REF. 4208AD

DXF

ECN DATE	NO.	BY

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WINAMAC, INDIANA

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SCALE 1/6" = 1"
BY GEORGE
DATE 6/29/99

HOIST H1
INSIDE CONTROLS
HOIST CONVENTIONAL CAB
3-SPOOL VALVE

BOOK NO. 18
NO. IS0300

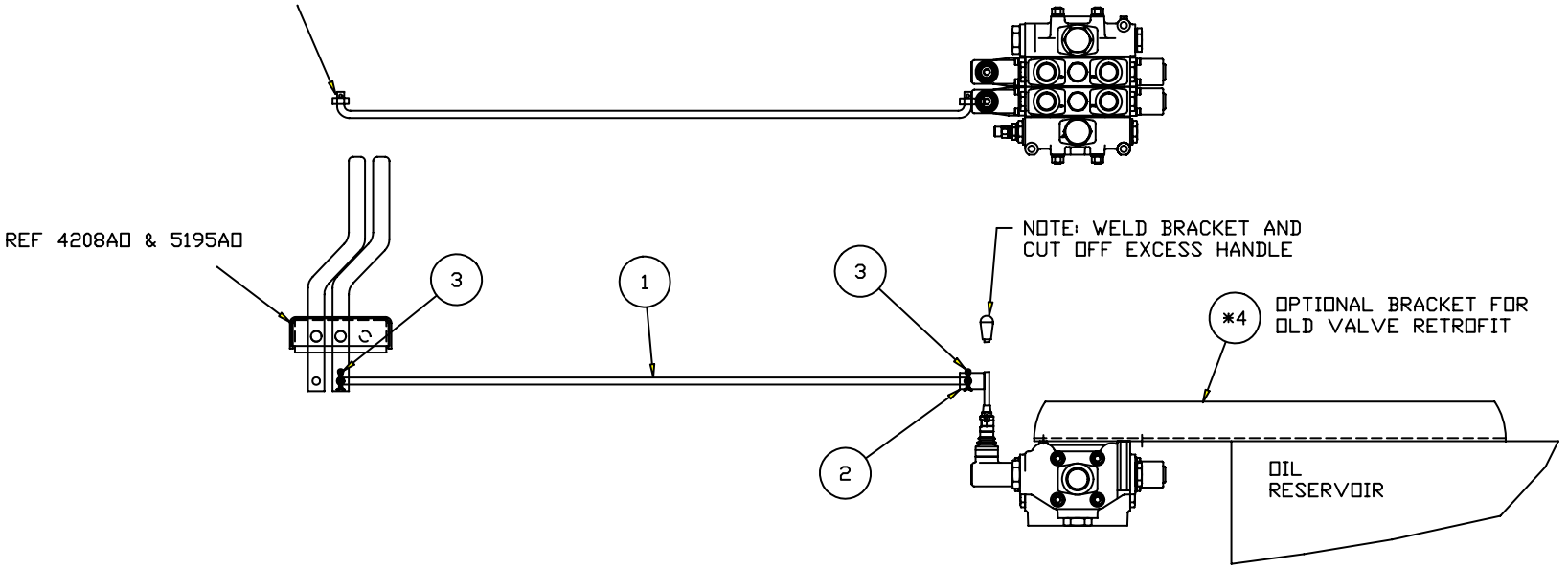
GALBREATH RECOMMENDS THE REPLACEMENT OF THE VALVE BRACKET IF THE CUSTOMER HAS A COMMERCIAL VALVE.

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	7/16 RD C1018 60	44RDC16-60	2	5.10	-
2	VALVE HANDLE BRACKET	AF977	2	.30	-
3	COT PIN, 3/32X1 1/4	09KP-125	4		-
*4	(OPTIONAL) VALVE BRACKET	AE302	1	25	-

OPTIONAL FOR 3-SPOOL VALVE

1	7/16 RD C1018 60	44RDC16-60	3	7.65	-
2	VALVE HANDLE BRACKET	AF977	3	.45	-
3	COT PIN, 3/32X1 1/4	09KP-125	6		-

NOTE: MEASURE, TRIM, AND BEND AT ASSEMBLY AND DRILL HOLES FOR COTTER PINS



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REF. 4208AD 5195AD DXF

ECN DATE | NO. | BY

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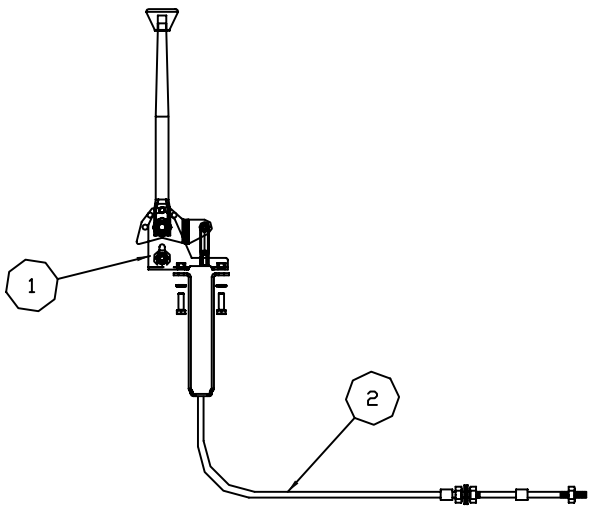
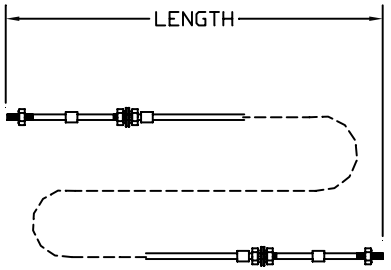
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/10" = 1"
BY GEORGE
DATE 07/31/02

HOISTS H
ROD CONTROLS LINKAGE
HOIST
(5771BD)

BOOK NO. 18
NO. IS5585





NOTE: WHEN ORDERING CONTROL CABLES, PLEASE SPEFICY DESIRED LENGTH FROM THE LIST. IF LENGTH IS NOT SPECIFIED, A 252" (PART NO. 3356) WILL BE SHIPPED. PART NO. 3355, 3356 AND 3011 ARE STOCK ITEMS. ALL OTHER LENGTHS ARE CONSIDERED SPECIAL ORDER.

NOTE: CABLE LENGTH CANNOT BE ALTERED IN THE FIELD. MEASURE CABLE FROM ROD END TO ROD END AS SHOWN.

ITEM NO.	DESCRIPTION	PART NO.	CABLE LENGTH
1.	CONTROL HANDLE (CABLE)	1510	--
2.	CONTROL CABLE	1097	192"
"	" "	2982	204"
"	" "	3354	228"
"	" "	3355	240"
"	" "	3356	252"
"	" "	3011	264"
"	" "	3012	276"
"	" "	2979	120"

R1 REDRAWN ON CAD

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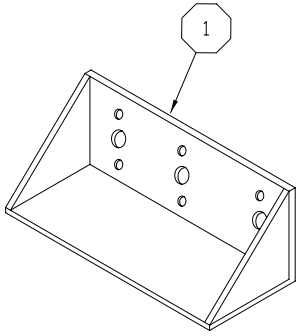
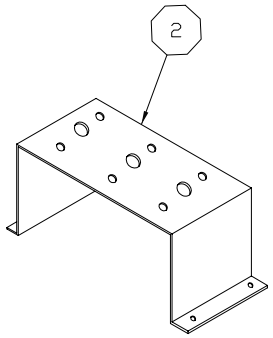
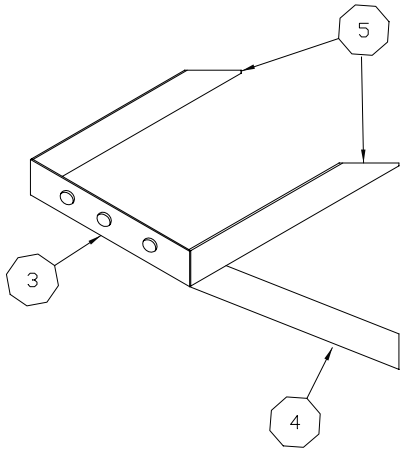
			REF. 5895A0	5896A0						DXF
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING	HOISTS ACCESSORY PARTS HOISTS IN CAB CONTROLS			BOOK NO. 18	
					SCALE 1/10" =1"					
12/2/98	R1	GB			BY GAB				NO. IS0301	
ECN DATE	NO.	BY			DATE 12/6/79					







ITEM NO.	DESCRIPTION	PART NO.
1.	HANDLE MT'G BRK'T (CONSOLE MOUNT)	2266A□
2.	HANDLE MT'G BRK'T (FLOOR MOUNT)	A470
3.	CABLE ANCHOR BRK'T (OIL TANK MOUNT)	C393
4.	CABLE ANCHOR BRK'T (OIL TANK MOUNT)	C394
5.	CABLE ANCHOR BRK'T (OIL TANK MOUNT)	C392

ITEM NO. 1 IS USED FOR MOUNTING CONTROL HANDLES INSIDE TILT CABS EQUIPPED WITH CONSOLE.
ITEM NO. 2 IS USED FOR MOUNTING CONTROL HANDLES INSIDE TILT CABS WITH FULL SEAT OR WITHOUT CONSOLE.
ITEM NO'S 3-4-5 ARE TO BE MOUNTED IN FRONT OF VALVE ON SIDE MOUNT OIL TANKS TO ANCHOR CONTROL CABLE ENDS.

R2 CORRECTED BILL OF MATERIAL
R1 REDRAWN ON CAD, ITEMS 3-4-5 WAS 4860A□

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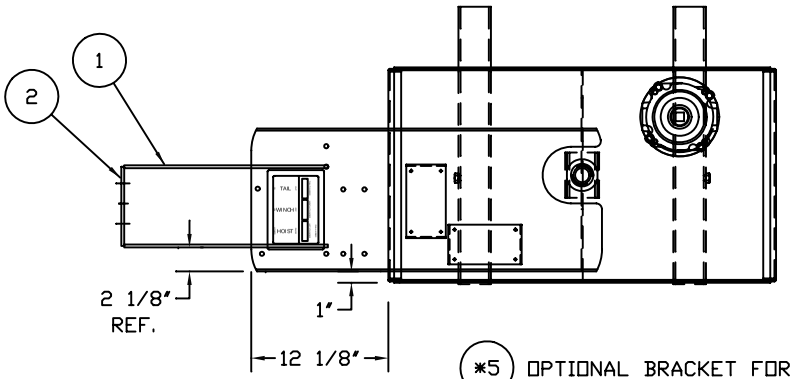
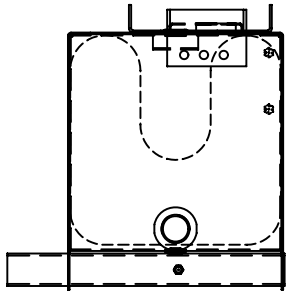
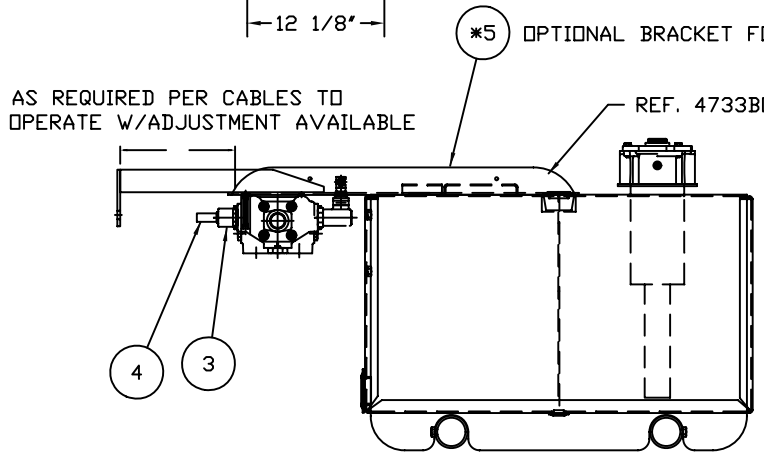
			REF. 4860A□								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H ACCESSORY PARTS HOISTS HANDLE & CABLE ANCHOR BRK'TS					BOOK NO. 18	
11/06/00	R2	GB		SCALE 1/10" =1"							
12/2/98	R1	GB		BY GAB						NO. IS0329	
ECN DATE	NO.	BY		DATE 12/10/79							

WASTEQUIP RECOMMENDS THE REPLACEMENT OF THE VALVE BRACKET IF THE CUSTOMER HAS A COMMERCIAL VALVE.







R1 ADDED ITEM 5

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			REF. 4736B0								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS CABLE CONTROLS MTG BRK'T HOISTS (4736B0)					BOOK NO. 18	
				SCALE 1/15" = 1"							
07/31/02	R1	GB		BY GEORGE						NO. IS4678	
ECN DATE	NO.	BY		DATE 11/07/00							

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	BRACKET, CABLE ANCHOR	C392	2	6	-
2	CABLE ANCHOR BRACKET	AE448	1	2.48	-
3	VALVE ADAPTOR, CABLE CONTROL	SEE CHART			-
4	CONNECTOR	SEE CHART			-
*5	(OPTIONAL) VALVE BRACKET	AE449	1	25	-

2 SPOOL	3	VALVE ADAPTOR, CABLE CONTROL	A3234	2		-
	4	CONNECTING LINK	AE452	2	.44	-
3 SPOOL	3	VALVE ADAPTOR, CABLE CONTROL	A3234	3		-
	4	CONNECTING LINK	AE452	3	.66	-

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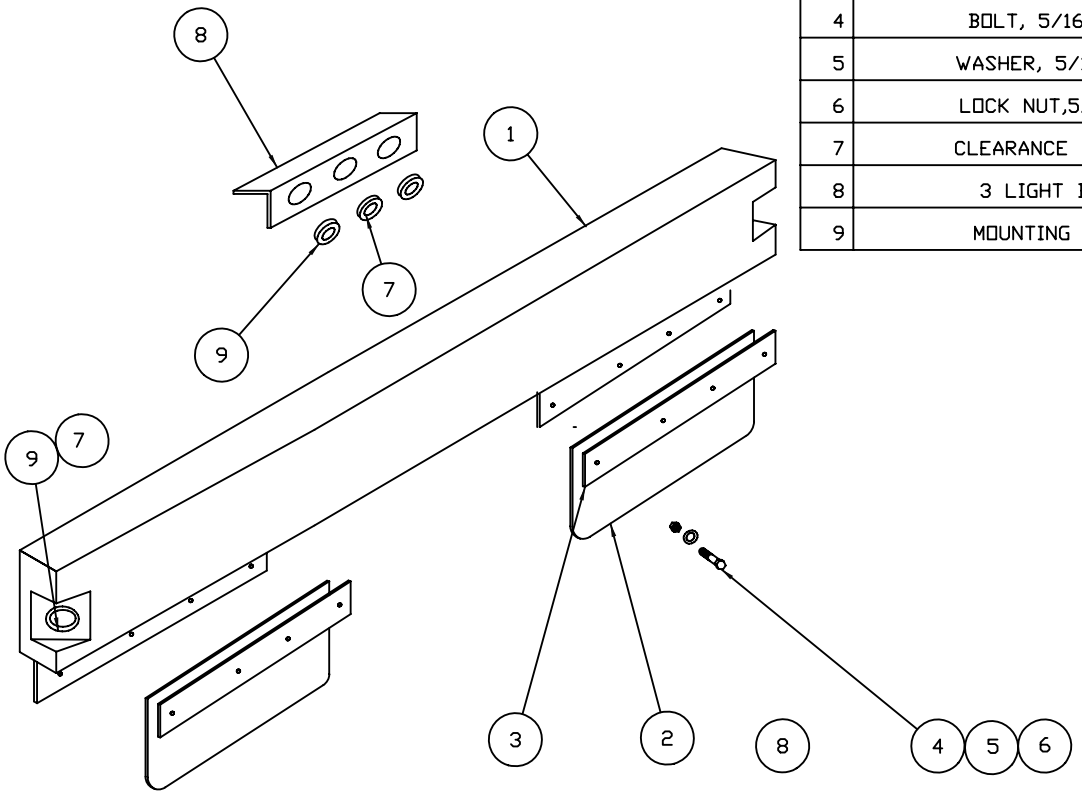
CHANGE DESCRIPTION	ECN DATE	NO.	BY
	07/31/02	R1	GB

Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING SCALE 1" = 1" BY GEORGE DATE 11/7/00	HOISTS CABLE CONTROLS HOIST (4736BO)	BOOK NO. 18 NO. IS4678-1



NO.	DESCRIPTION	PART NO.	QTY	WT
1	HEAVY DUTY BUMPER	2314W	1	244
2	MUD FLAP	8957	2	6
3	MUD FLAP BRACKET	432	2	3
4	BOLT, 5/16-18X1 G5	31B18G5-1	8	1
5	WASHER, 5/16 G5 USS	31WG5USS	8	1
6	LOCK NUT,5/16-18 G5	31LN18G5	8	1
7	CLEARANCE LIGHT RED	4452	5	1
8	3 LIGHT BRACKET	378	1	2
9	MOUNTING GROMENT	4454	5	-

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REF. 5507AD

DXF

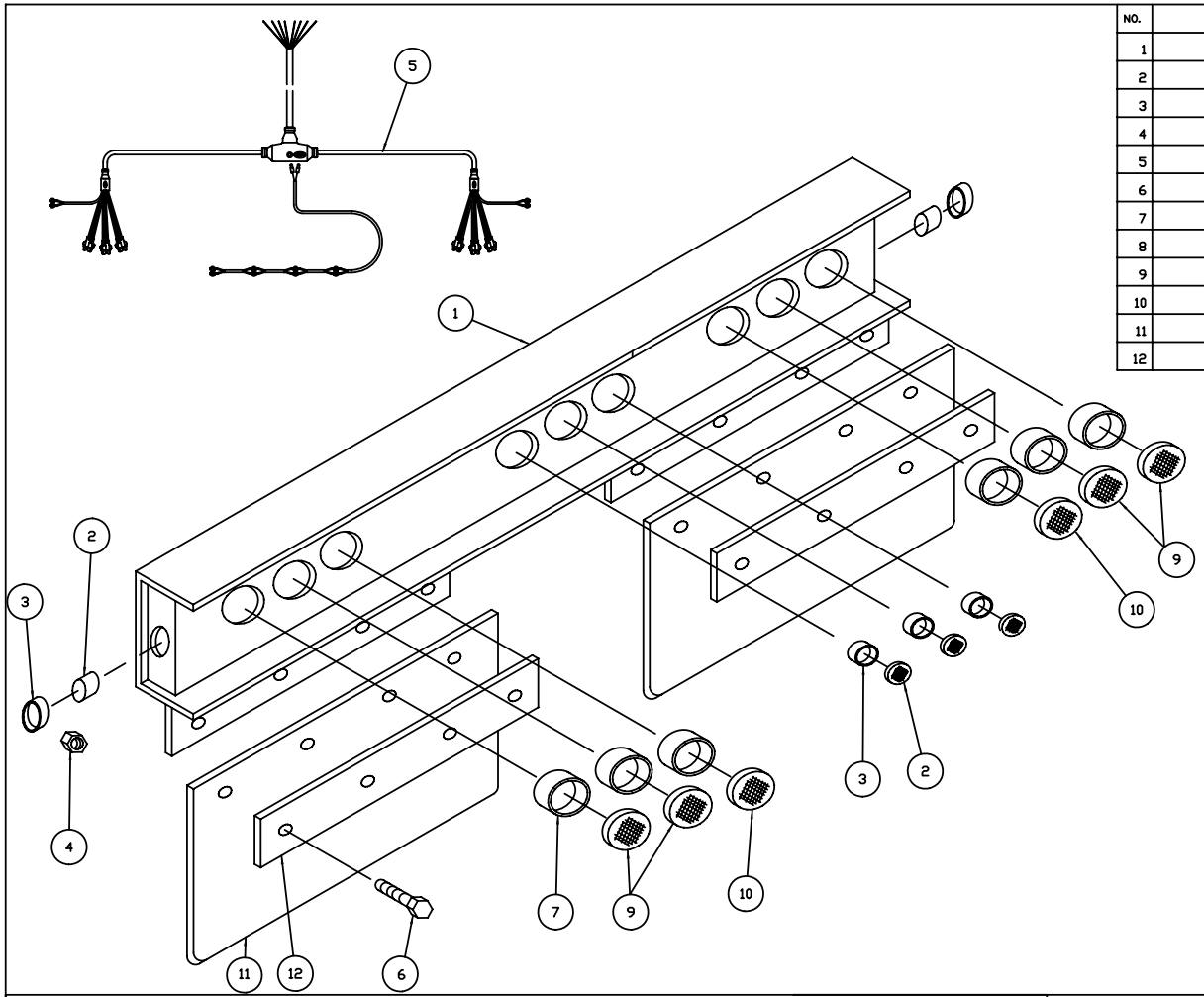
ECN DATE | NO. | BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/10" = 1"
BY GEORGE
DATE 6/29/99

HOISTS
HEAVY DUTY BUMPER ASSEMBLY
HOISTS

BOOK NO. 18
NO. IS4172



NO.	DESCRIPTION	PART NO.	QTY	WT	
1	BUMPER	5759A0	1	164	
2	RED CLEARENCE LIGHT	4452	5	2	
3	MOUNTING GROMMET	4454	5	1	
4	LOCKNUT, 5/16-18 G5	31LN18G5	8	1	2673
5	TRUCK WIRING HARNESS	A1242	1	1	
6	BOLT, 5/16-18X1 G5	31B18G5-100	8	1	1154
7	LIGHT MOUNTING GROMMET	4797	6	1	
8					
9	RED RECESSED LIGHT	4448	4	3	
10	BACK UP LIGHT	4449	2	1	
11	MUD FLAP	8957	2	6	
12	MUD FLAP BRACKET	432	2	4	

TOTAL WT. = 185

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REF. 5703A0 | DXF

ECN	DATE	NO.	BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/10" = 1"
BY GEORGE
DATE 6/29/99

HOISTS H
BUMPER ASSEMBLY W/RECESSED LIGHTS
HOISTS
(5703A0)

BOOK NO. 18
NO. IS4171

MOUNTING INSTRUCTIONS

1– LOCATE THE LOWER ANCHORS (ITEM 6) USING THE 2 "HOLD" DIMENSIONS GIVEN. (WELD SOLID IN PLACE)

2– LOCATE THE UPPERS ANCHOR (ITEM 4) USING THE 2 "HOLD" DIMENSIONS SHOWN. (TACK WELD THE UPPER ANCHOR)

3– ADD THE BUMPER WELDMENT (ITEM 1) USE ITEM 2 AND PIN BUMPER TO LOWER ANCHORS.

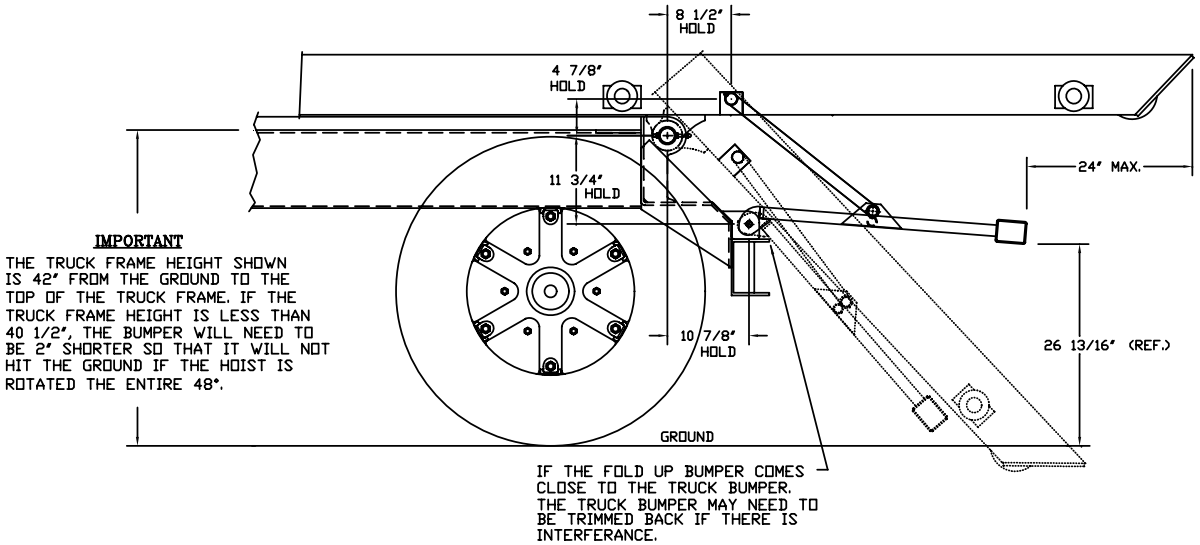
4– ADD THE 25 1/2" ANGLED LINK (ITEM 3) (DO NOT ADD THE COLLARS YET)

5– CYCLE THE HOIST TO CHECK THAT THE BUMPER CLEARS THE HOIST AND THE GROUND.

6– IF THE BUMPER HITS EITHER THE HOIST OR THE GROUND, MOVE THE UPPER ANCHOR FORWARD/BACKWARD TO MAKE IT CLEAR. WHEN MOVING THE UPPER ANCHOR, KEEP THE SAME HOLD HEIGHT AND ONLY MOVE HORIZONTALY. MOVING THE UPPER ANCHOR TOWARDS THE REAR MAKES THE BUMER GO DOWN FASTER THAN THE HOIST (MOVING IT AWAY FROM THE HOIST TUBES) WHILE MOVING THE UPPER ANCHOR TOWARDS THE HINGE PUTS THE BUMPER CLOSER TO THE HOIST TUBES WHEN THE HOIST IS UP.

NOTE: MOVING THE UPPER ANCHOR 1/2" WILL MAKE THE BUMPER MOVE APPROXIMATLY 3" EITHER CLOSER OR FURTHER AWAY FROM THE HOIST TUBES.

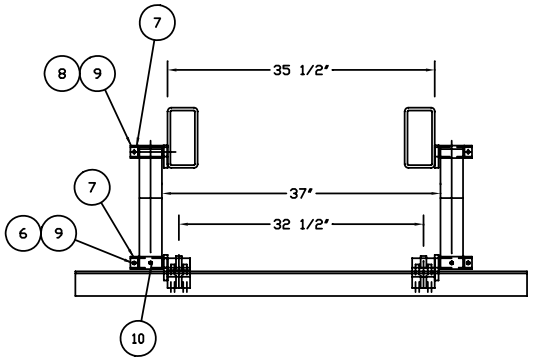
NO.	DESCRIPTION	PART NO.	QTY	WT
1	BUMPER WELDMENT	3784W	1	106
2	BOLT, 3/4-10X3 G5	75B10G5-300	2	-
3	LINK	3827W	2	15
4	ANCHOR, UPPER	3785W	2	5
5	LOCKNUT,3/4-10 G5	75LN10G5	2	
6	ANCHOR, LOWER	J441	4	8
7	COLLAR	J449	4	1
8	BOLT, 3/8-16X2 G5	38B16G5-200	4	-
9	LOCKNUT,3/8-16 G5	38LN16G5	4	-
10	GREASE FTG, 1/4-28 STR	04GZ28-S	4	-



IMPORTANT

THE TRUCK FRAME HEIGHT SHOWN IS 42" FROM THE GROUND TO THE TOP OF THE TRUCK FRAME. IF THE TRUCK FRAME HEIGHT IS LESS THAN 40 1/2", THE BUMPER WILL NEED TO BE 2" SHORTER SO THAT IT WILL NOT HIT THE GROUND IF THE HOIST IS ROTATED THE ENTIRE 48°.

IF THE FOLD UP BUMPER COMES CLOSE TO THE TRUCK BUMPER. THE TRUCK BUMPER MAY NEED TO BE TRIMMED BACK IF THERE IS INTERFERANCE.



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REF. 7173A0

DXF

R3 CHANGED DIMENSIONS	7/7/99	R3	GB	
	ECN DATE	NO.	BY	

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/15"= 1"
BY CWM
DATE 9/27/90

HOISTS H
AUTOMATIC FOLD UP BUMPER
FOR OR, IO, & IX MODEL HOIST

BOOK NO. 18
NO. IS1135

MOUNTING INSTRUCTIONS

1- LOCATE THE LOWER ANCHORS (ITEM 6) USING THE 2 "HOLD" DIMENSIONS GIVEN. (WELD SOLID IN PLACE)

2- LOCATE THE UPPERS ANCHOR (ITEM 4) USING THE 2 "HOLD" DIMENSIONS SHOWN. (TACK WELD THE UPPER ANCHOR)

3- ADD THE BUMPER WELDMENT (ITEM 1) USE ITEM 2 AND PIN BUMPER TO LOWER ANCHORS.

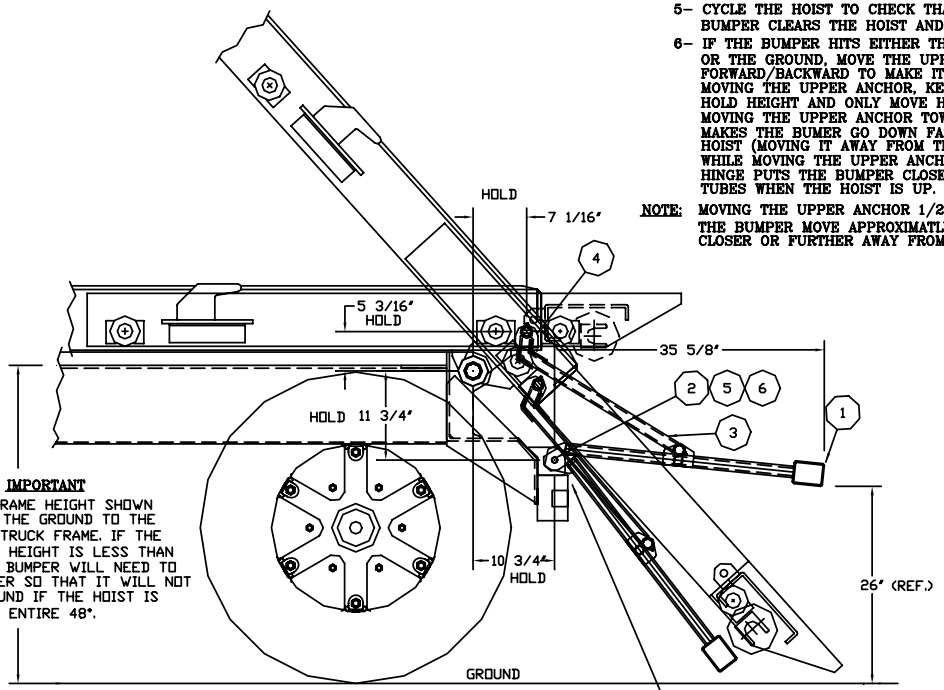
4- ADD THE 25 1/2" ANGLED LINK (ITEM 3) (DO NOT ADD THE COLLARS YET)

5- CYCLE THE HOIST TO CHECK THAT THE BUMPER CLEARS THE HOIST AND THE GROUND.

6- IF THE BUMPER HITS EITHER THE HOIST OR THE GROUND, MOVE THE UPPER ANCHOR FORWARD/BACKWARD TO MAKE IT CLEAR. WHEN MOVING THE UPPER ANCHOR, KEEP THE SAME HOLD HEIGHT AND ONLY MOVE HORIZONTALY. MOVING THE UPPER ANCHOR TOWARDS THE REAR MAKES THE BUMER GO DOWN FASTER THAN THE HOIST (MOVING IT AWAY FROM THE HOIST TUBES) WHILE MOVING THE UPPER ANCHOR TOWARDS THE HINGE PUTS THE BUMPER CLOSER TO THE HOIST TUBES WHEN THE HOIST IS UP.

NOTE: MOVING THE UPPER ANCHOR 1/2" WILL MAKE THE BUMPER MOVE APPROXIMATLY 3" EITHER CLOSER OR FURTHER AWAY FROM THE HOIST TUBES.

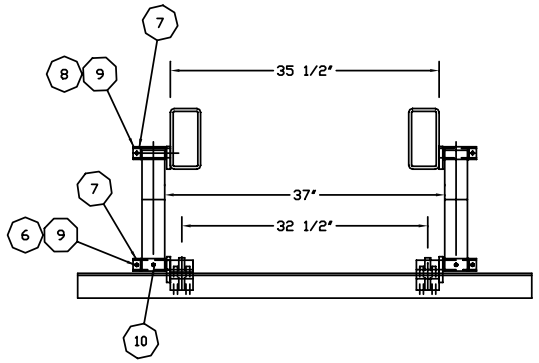
NO.	DESCRIPTION	PART NO.	QTY	WT
1	BUMPER WELDMENT	3784W	1	106
2	BOLT, 3/4-10X3 G5	75B10G5-300	2	-
3	LINK	0782BD	2	33
4	ANCHOR, UPPER	3785W	2	5
5	LOCKNUT,3/4-10 G5	75LN10G5	2	
6	ANCHOR, LOWER	J441	4	8
7	COLLAR	J449	4	1
8	BOLT, 3/8-16X2 G5	38B16G5-200	4	-
9	LOCKNUT,3/8-16 G5	38LN16G5	4	-
10	GREASE FTG, 1/4-28 STR	04GZ28-S	4	-



IMPORTANT

THE TRUCK FRAME HEIGHT SHOWN IS 42" FROM THE GROUND TO THE TOP OF THE TRUCK FRAME. IF THE TRUCK FRAME HEIGHT IS LESS THAN 40 1/2", THE BUMPER WILL NEED TO BE 2" SHORTER SO THAT IT WILL NOT HIT THE GROUND IF THE HOIST IS ROTATED THE ENTIRE 48".

IF THE FOLD UP BUMPER COMES CLOSE TO THE TRUCK BUMPER. THE TRUCK BUMPER MAY NEED TO BE TRIMMED BACK IF THERE IS INTERFERANCE.



SEE IS4175 FOR THE SAME BUMPER USED WITH A PINTLE HOOK

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REF. 7403A0 DXF

	ECN DATE	NO.	BY
R3 CHANGED DIMENSIONS, ITEM 3 WAS 3783W	07/06/99	R3	GB

GALBREATH INCORPORATED WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/15" = 1"
BY CWM
DATE 6/29/90

HOISTS H
AUTOMATIC FOLD UP BUMPER
FOR EX MODEL HOIST

BOOK NO. 18
NO. IS1219

MOUNTING INSTRUCTIONS

1– LOCATE THE LOWER ANCHORS (ITEM 6) USING THE 2 "HOLD" DIMENSIONS GIVEN. (WELD SOLID IN PLACE)

2– LOCATE THE UPPERS ANCHOR (ITEM 4) USING THE 2 "HOLD" DIMENSIONS SHOWN. (TACK WELD THE UPPER ANCHOR)

3– ADD THE BUMPER WELDMENT (ITEM 1) USE ITEM 2 AND PIN BUMPER TO LOWER ANCHORS.

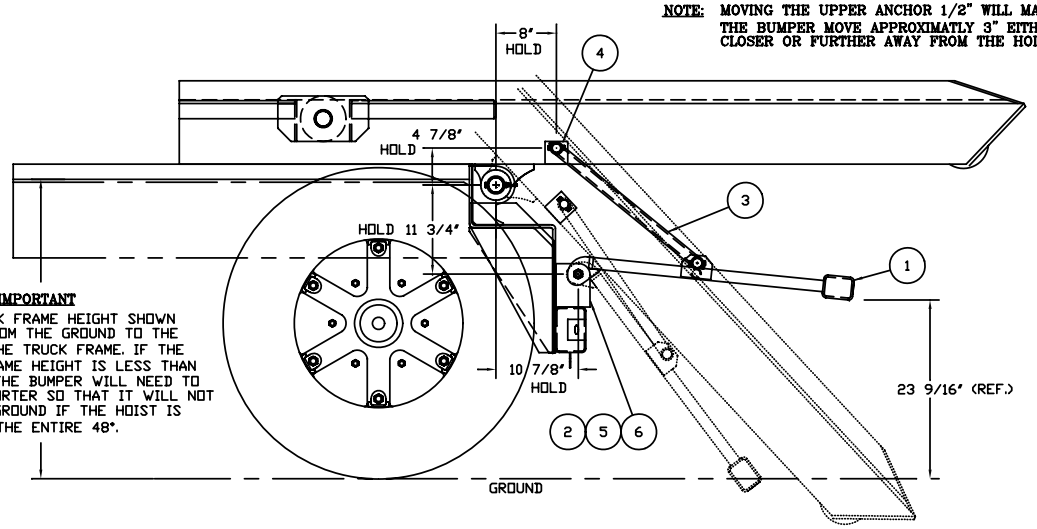
4– ADD THE 25 1/2" ANGLED LINK (ITEM 3) (DO NOT ADD THE COLLARS YET)

5– CYCLE THE HOIST TO CHECK THAT THE BUMPER CLEARS THE HOIST AND THE GROUND.

6– IF THE BUMPER HITS EITHER THE HOIST OR THE GROUND, MOVE THE UPPER ANCHOR FORWARD/BACKWARD TO MAKE IT CLEAR. WHEN MOVING THE UPPER ANCHOR, KEEP THE SAME HOLD HEIGHT AND ONLY MOVE HORIZONTALY. MOVING THE UPPER ANCHOR TOWARDS THE REAR MAKES THE BUMER GO DOWN FASTER THAN THE HOIST (MOVING IT AWAY FROM THE HOIST TUBES) WHILE MOVING THE UPPER ANCHOR TOWARDS THE HINGE PUTS THE BUMPER CLOSER TO THE HOIST TUBES WHEN THE HOIST IS UP.

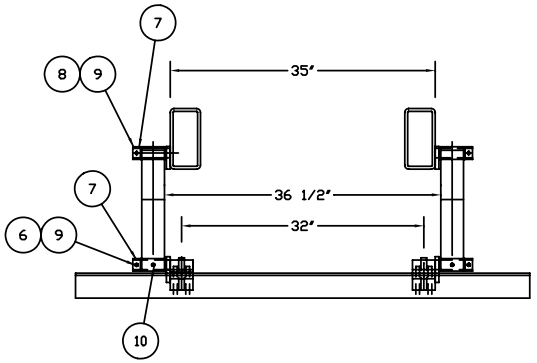
NOTE: MOVING THE UPPER ANCHOR 1/2" WILL MAKE THE BUMPER MOVE APPROXIMATLY 3" EITHER CLOSER OR FURTHER AWAY FROM THE HOIST TUBES.

NO.	DESCRIPTION	PART NO.	QTY	WT
1	BUMPER WELDMENT	3975W	1	96
2	BOLT, 3/4-10X3 G5	75B10G5-300	2	-
3	LINK	3827W	2	36
4	ANCHOR, UPPER	3785W	2	5
5	LOCKNUT,3/4-10 G5	75LN10G5	2	
6	ANCHOR, LOWER	K235	4	9
7	COLLAR	J449	4	1
8	BOLT, 3/8-16X2 G5	38B16G5-200	4	-
9	LOCKNUT,3/8-16 G5	38LN16G5	4	-
10	GREASE FTG, 1/4-28 STR	04GZ28-S	4	-



IMPORTANT

THE TRUCK FRAME HEIGHT SHOWN IS 42" FROM THE GROUND TO THE TOP OF THE TRUCK FRAME. IF THE TRUCK FRAME HEIGHT IS LESS THAN 40 1/2", THE BUMPER WILL NEED TO BE 2" SHORTER SO THAT IT WILL NOT HIT THE GROUND IF THE HOIST IS ROTATED THE ENTIRE 48".



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REF. 7543A0 DXF

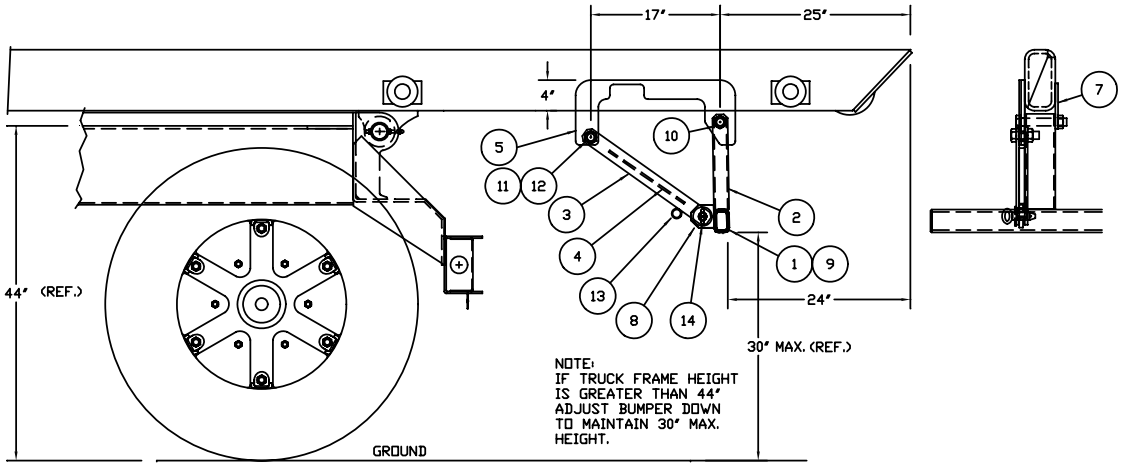
	ECN DATE	NO.	BY
R3 CHANGED DIMENSIONS	07/06/99	R3	GB

GALBREATH INCORPORATED WINAMAC, INDIANA

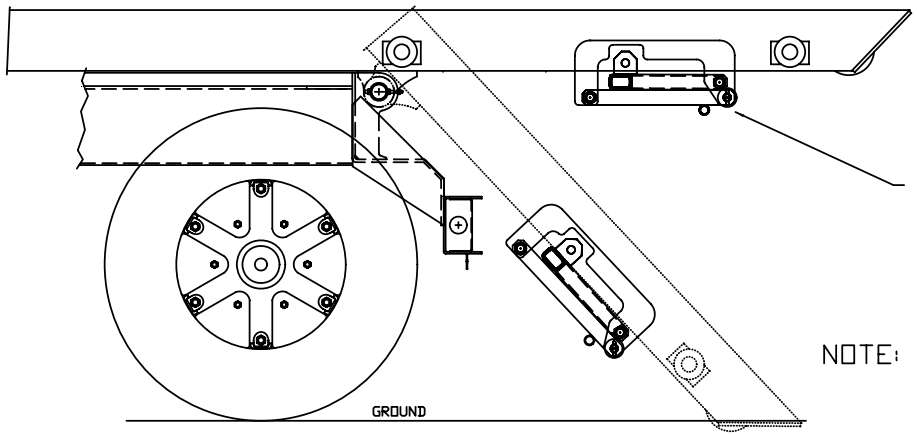
DO NOT SCALE DRAWING
SCALE 1/15"= 1"
BY KRW
DATE 12/11/90

HOISTS H
AUTOMATIC FOLD UP BUMPER
FOR SI MODEL HOIST

BOOK NO. 18
NO. IS1239



NO.	DESCRIPTION	PART NO.	QTY	WT
1	3X2X5/16 [IC 60	31RTC32-60	1	
2	MOUNTING BRACKET	F743	2	
3	BRACE	F736	4	
4	1/4X3/4 A36 12	25A36-.75-12	2	
5	MOUNTING BRACKET	AB458	2	
6				
7	MOUNTING BRACKET	F739	2	
8	MOUNTING BRACKET	F740	2	
9	10GA CQ 1 3/4X2 3/4	10S1.75 2.75	2	
10	BOLT,1-8X7 G5	100B8G5-700	2	
11	NOCKNUT,1-8 G5	100LN8G5	4	
12	BOLT,1-8X3 G5	100B8G5-300	2	
13	1P SCH40 1 1/4	100BP40-1.25	2	
14	PIN ASSEMBLY	6768A0	2	



NOTE: TO ASSURE THAT THE BRACKETS ON THE HOIST MAIN FRAME HAVE ADEQUATE CLEARANCE, FOLD THE BUMPER UP IN THE RAISED POSITION, IF THE UNIT WORKS PROPERLY, WELD THE BRACKETS ON THE HOIST MAIN FRAME SOLID.

NOTE: DO NOT THIS BUMPER WHEN HOIST HAS SKID PLATES

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REF. 7106A0 DXF

	ECN DATE	NO.	BY
R4 ITEM 5 WAS F737, 6 WAS F738	12/10/99	R4	GB
R3 ADDED BILL OF MATERIAL	07/15/99	R3	GB
R2 REDRAWN ON CAD	07/15/99	R2	GB

GALBREATH INCORPORATED WINAMAC, INDIANA

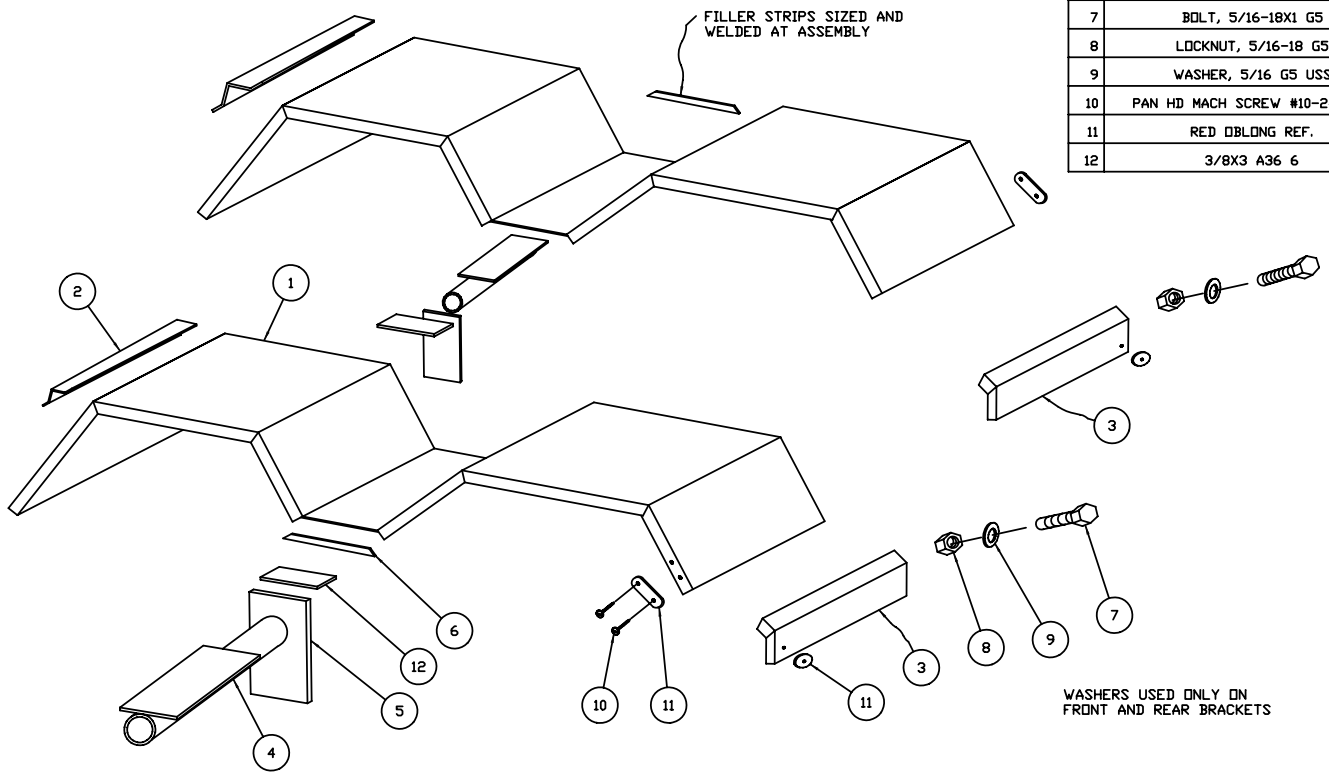
DO NOT SCALE DRAWING
SCALE 1/15" = 1"
BY CWM
DATE 7/23/87

HOISTS H
MANUAL FOLD UP BUMPER
(7106A0)

BOOK NO. 18
NO. IS1063

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	FENDER	1718W	2	222	-
2	BRACE, FRONT FENDER	641	2	19	-
3	FILLER, SHORT REAR FENDER	391	2	20	-
4	BRACKET, FENDER MOUNTING	1717W	2	52	-
5	3/8PL A36 10 1/2X14 1/2	52P10.5 14.5	2	32	-
6	EDGE, OUTSIDE OF FENDER	429	2	1	-
7	BOLT, 5/16-18X1 G5	31B18G5-100	32	2	1154
8	LOCKNUT, 5/16-18 G5	31LN18G5	32	1	2673
9	WASHER, 5/16 G5 USS	31WG5USS	20	1	1150
10	PAN HD MACH SCREW #10-24X5/8	3953	8	-	-
11	RED OBLONG REF.	1475	4	1	-
12	3/8X3 A36 6	38A36-3-6	2	4	-

TOTAL WT. = 355.00 lbs



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REF. IS834

DXF

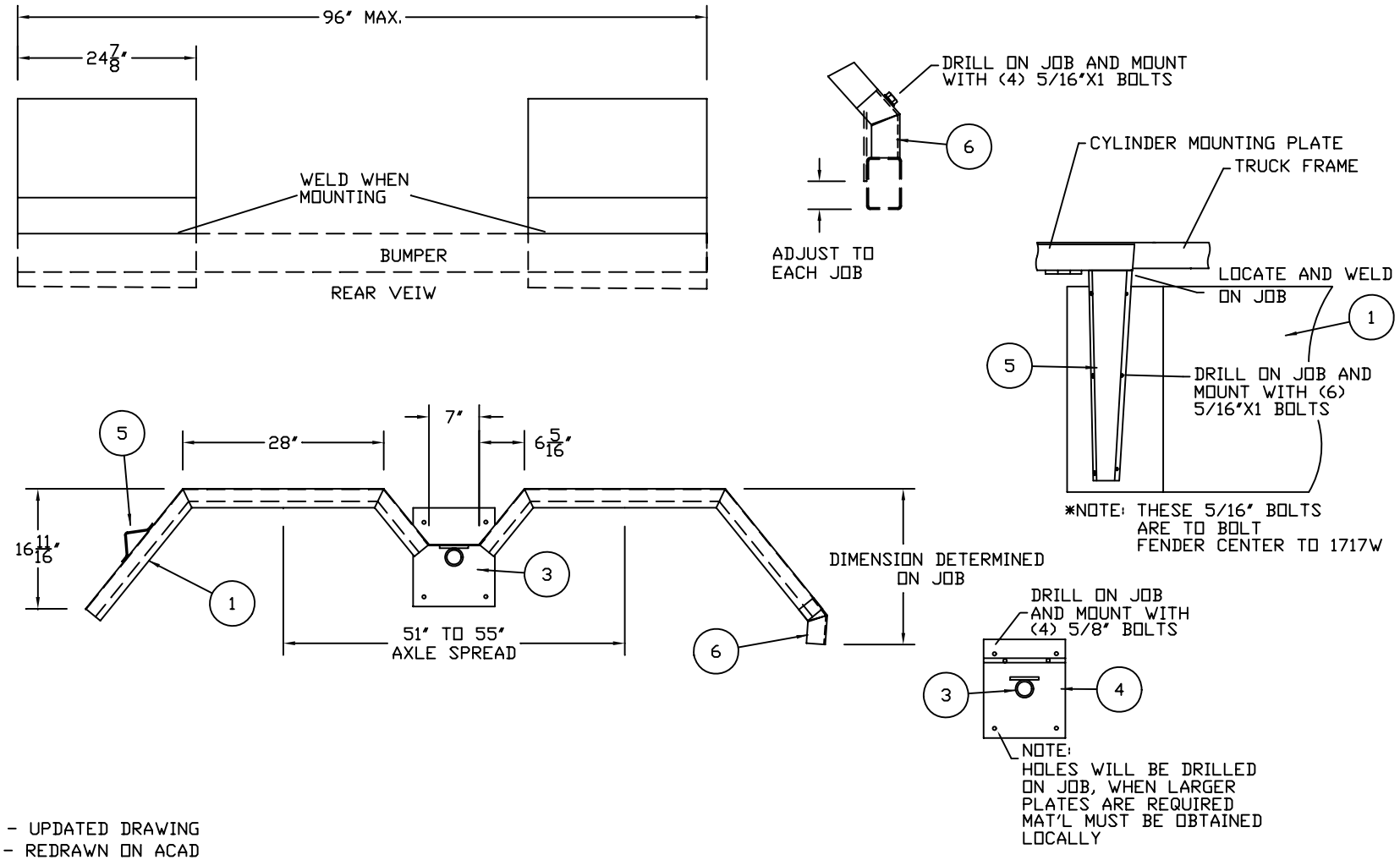
	ECN DATE	NO.	BY
R7 ITEM 5 WAS E932, 10 WAS 3013	05/14/98	R7	GB
R6 ADDED ITEM 12	12/04/97	R6	GB
R5 REDRAWN ON CAD, UPDATED PART NO.	02/27/96	R5	GB

GALBREATH
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/10" = 1"
BY C.J.
DATE 08/01/84

HOISTS H
FENDER KIT
TANDEM-AXLE

BOOK NO. 12
NO. 0351A0



R2 - UPDATED DRAWING
R1 - REDRAWN ON ACAD

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ECN DATE	NO.	BY	REF.
01/03/00	R2	HMK	
07/11/95	R1	RBW	

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING	
SCALE	1/20"=1"
BY	GEORGE
DATE	01/09/74

REAR FENDER INSTALLATION FOR U-MODEL HOIST

BOOK NO.	18C
NO.	IS0834

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	FENDER WELDM'T	1718W	2	192	-
2	BOLT, 5/16-13X1 G5	31B13G5-100	36	4	-
3	BRACE	1717W	2	52	-
4	38PL CQ 101/2X14 1/2	06P10.5 14.5	2	19	-
5	FRONT FENDER MTG.	641	2	20	-
6	REAR FENDER MTG.	391	2	20	-
7	LOCKNUT, 5/16-13 G5	31LN13G5	36	2	-

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REF.				PAGE OF

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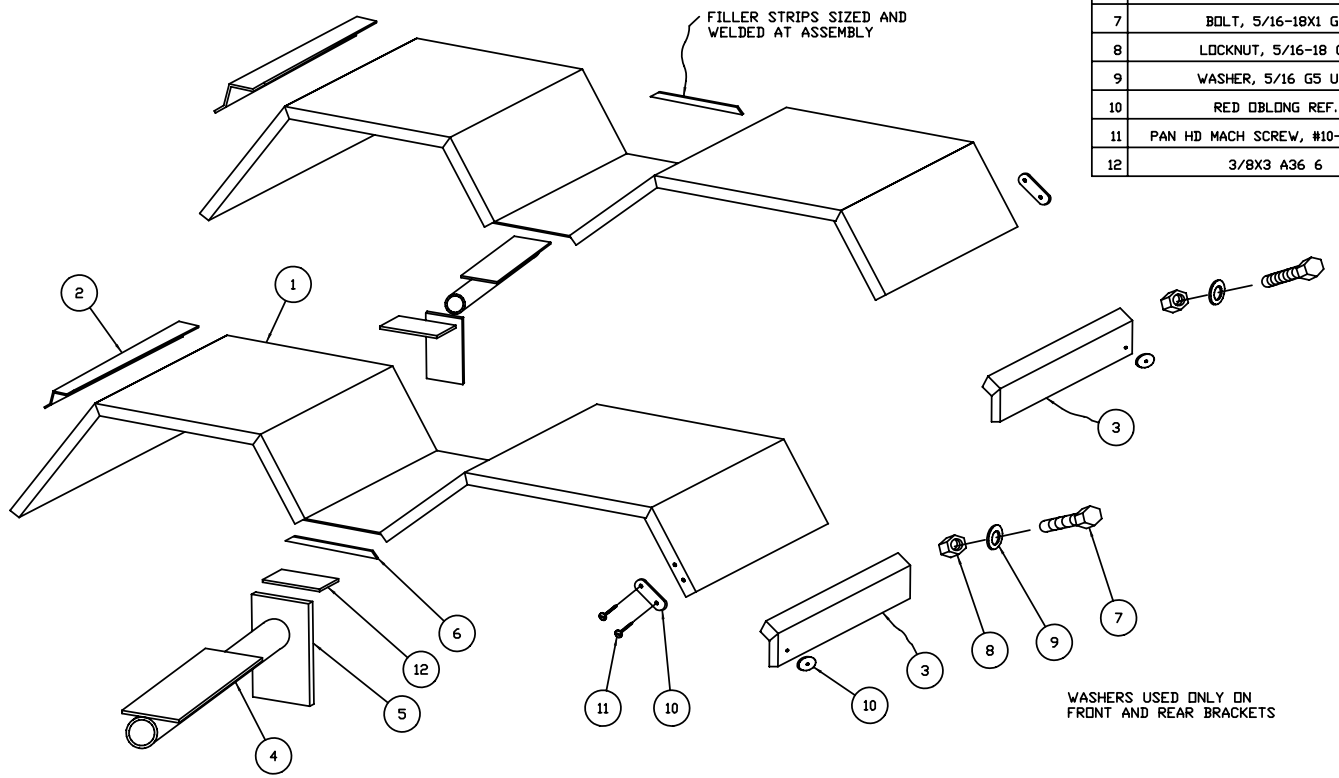
CHANGE DESCRIPTION	ECN DATE	NO.	BY
R1 REDRAWN ON CAD	7/11/95	R1	GB

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING	HOISTS H1	BOOK NO.
SCALE 1" = 1"	REAR FENDER INSTALLATION	18
BY GEORGE	FOR U- MODEL HOISTS	NO.
DATE 1/09/74		IS0834A

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	FENDER WELDMENT	1723W	2	202	
2	FRONT BRACE	641	2	19	
3	SHORT FILLER STRIP	391	2	20	
4	FENDER BRACE	1717W	2	52	
5	3/8PL A36 10 1/2X14 1/2	52P10.5 14.5	2	32	
6	OUTSIDE EDGE	760	2	2	
7	BOLT, 5/16-18X1 G5	31B18G5-100	32	2	
8	LOCKNUT, 5/16-18 G5	31LN18G5	32	1	
9	WASHER, 5/16 G5 USS	31WG5USS	20	1	
10	RED OBLONG REF.	1475	4	1	
11	PAN HD MACH SCREW, #10-24X-5/8	3953	4	1	
12	3/8X3 A36 6	38A36-3-6	2	4	

TOTAL WT. = 337.00 lbs



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REF. IS836

DXF

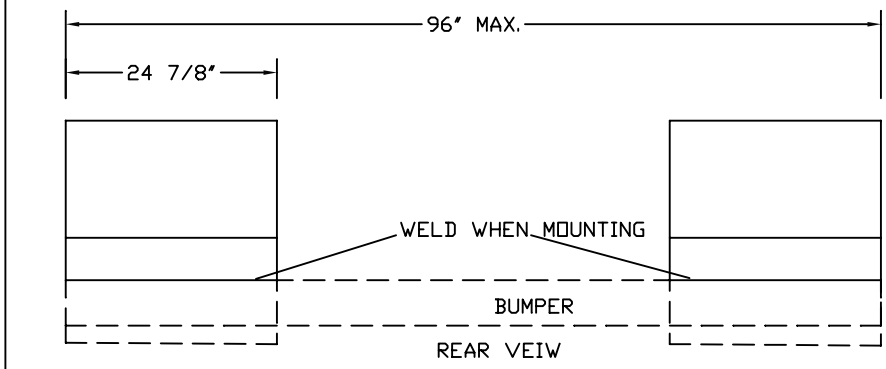
	ECN DATE	NO.	BY
R5 ITEM 5 WAS 06P, 10 WAS QTY 2, 11 WAS 3013	05/14/98	R5	GB.
R4 REDRAWN ON CAD, ADDED ITEM 12	12/04/97	R4	GB

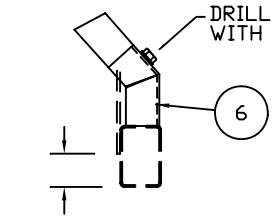
GALBREATH
INCORPORATED
WINAMAC, INDIANA

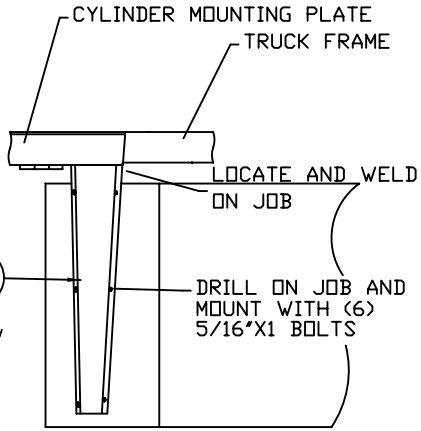
DO NOT SCALE DRAWING
SCALE 1/10" = 1"
BY CJM
DATE 08/03/84

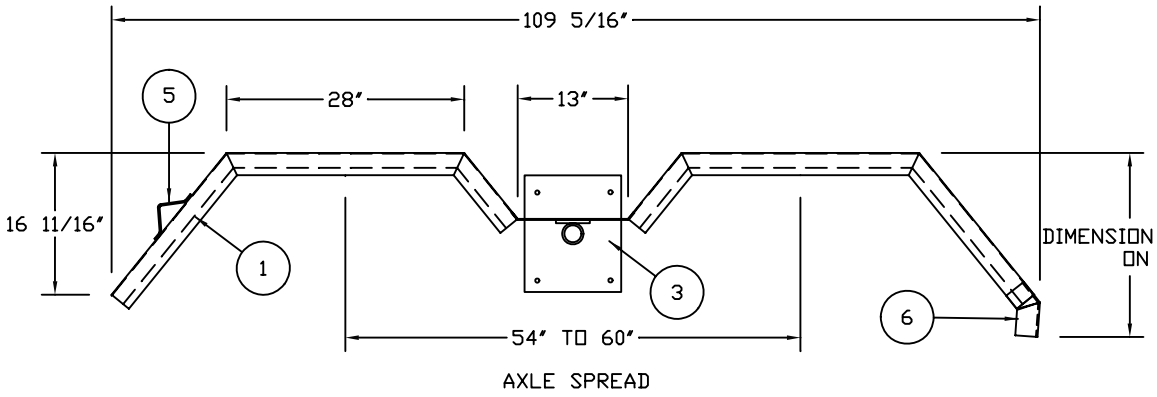
HOISTS H
FENDER KIT
UX TANDEM HOISTS

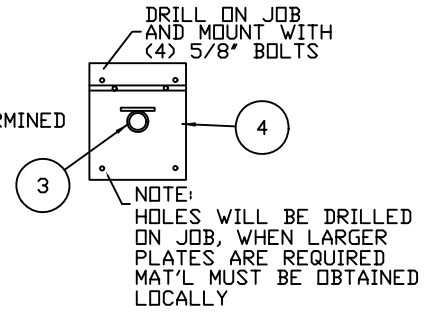
BOOK NO. 12
NO. 988A0











R2 - UPDATED DRAWING

R1 - REDRAWN ON ACAD

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			REF.								
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	REAR FENDER INSTALLATION FOR UX-MODEL HOIST	BOOK NO. 18C
01/03/00	R2	HMK		SCALE 1/20"=1"		
07/11/95	R1	RBW		BY D.L.B		NO. IS0836
ECN DATE	NO.	BY		DATE 02/16/78		

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	FENDER WELDM'T	1723W	2	204	-
2	BOLT, 5/16-13X1 G5	31B13G5-100	44	4	-
3	BRACE	1717W	2	52	-
4	38PL CQ 10 1/2X14 1/2	06P10.5 14.5	3	28	-
5	FRONT FENDER MTG.	641	2	20	-
6	REAR FENDER MTG.	391	2	20	-
7	LOCKNUT, 5/16-13 G5	31LN13G5	44	2	-

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CHANGE DESCRIPTION	ECN DATE	NO.	BY
R1 REDRAWN ON CAD	07/11/95	R1	RBW

Galbreath
INCORPORATED
WINAMAC, INDIANA

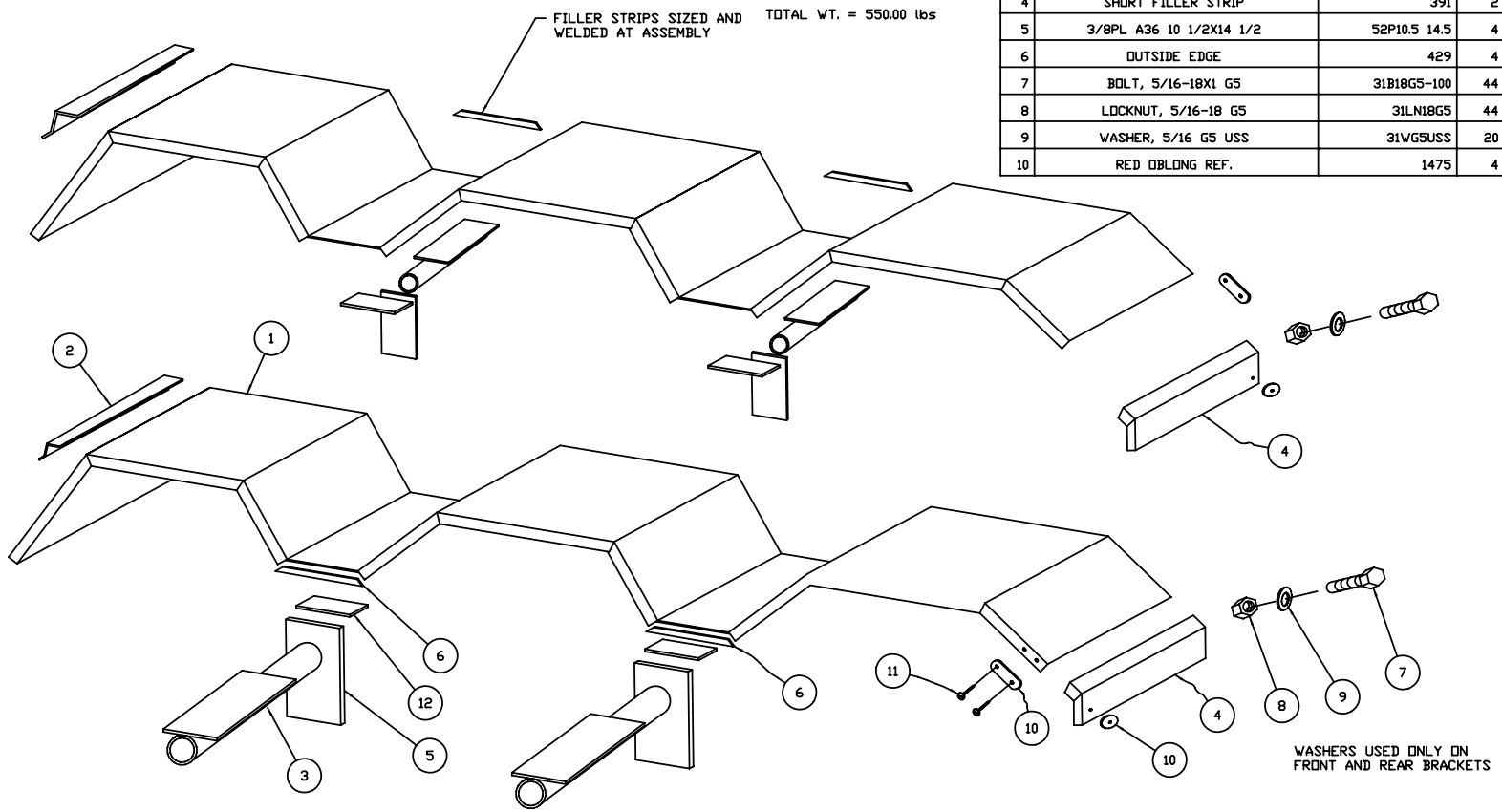
DO NOT SCALE DRAWING
SCALE 1" = 1"
BY DLB
DATE 2/16/78

HOISTS H1
REAR FENDER INSTALLATION
UX MODEL HOISTS

BOOK NO. 18
NO. IS0836A

NO.	DESCRIPTION	PART NO.	QTY	WT	
11	PAN HD MACH SCREW #10-24-5/8	3953	8	-	-
12	3/8X3 A36 6	38A36-3-6	4	8	-
13	NUT, #10-24 G2	10N24G2	8		-

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	FENDER	0882BD	2	326	-
2	FRONT BRACE	641	2	19	-
3	FENDER BRACE	1717W	4	104	-
4	SHORT FILLER STRIP	391	2	20	-
5	3/8PL A36 10 1/2X14 1/2	52P10.5 14.5	4	65	-
6	OUTSIDE EDGE	429	4	3	-
7	BOLT, 5/16-18X1 G5	31B18G5-100	44	2	1154
8	LOCKNUT, 5/16-18 G5	31LN18G5	44	1	2673
9	WASHER, 5/16 G5 USS	31WG5USS	20	1	1150
10	RED OBLONG REF.	1475	4	1	-



R8 ITEM 5 WAS E932, 11 WAS 3013, ADDED ITEM 13 5/19/98 R8 GB

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COVERED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS:

REF. IS835 DXF

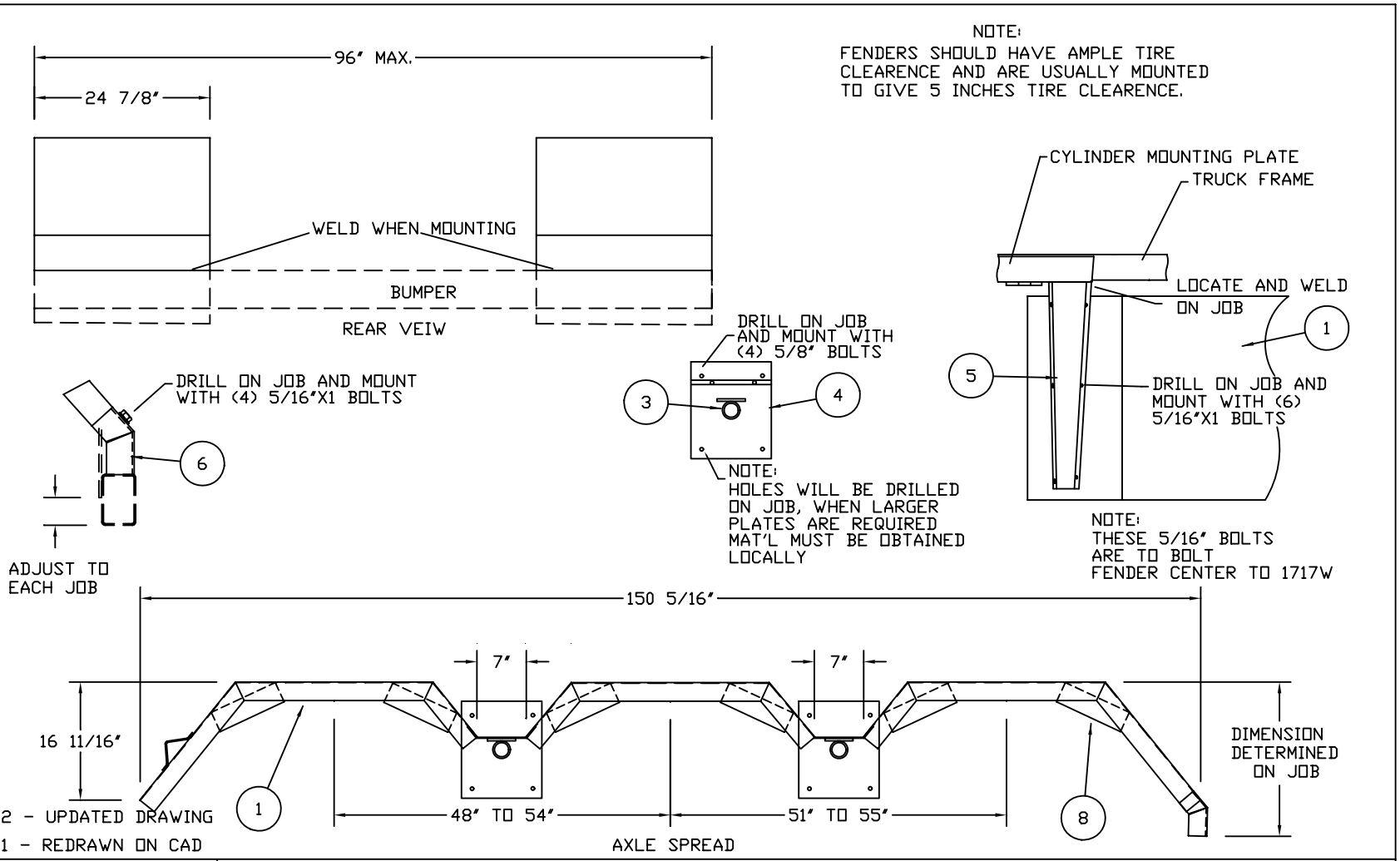
	ECN DATE	NO.	BY
R7 ADDED ITEM 12	12/04/97	R7	GB
ITEM 1 WAS 1719W. UPDATED TO NEW PART NO. SYS.	12/08/95	R6	JWR
R5 REDRAWN ON CAD NO CHANGE	02/10/93	R5	GB

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/10" = 1"
BY C.J.
DATE 08/01/84

HOISTS H
FENDER KIT
TRI-AXLE HOISTS
7' - 7' SPACERS

BOOK NO. 12
NO. 353A0



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ECN DATE	NO.	BY	REF.
01/03/99	R2	HMK	
07/11/95	R1	RBW	

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING	
SCALE	1/20"=1"
BY	D.L.B
DATE	02/18/78

REAR FENDER INSTALLATION FOR HOISTS EQUIPPED WITH THIRD PUSH AXLE

BOOK NO.	18C
NO.	IS0835

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	FENDER WELDM'T	1719W	2	256	-
2	BOLT, 5/16-13X1 G5	31B13G5-100	52	5	-
3	BRACE	1717W	4	104	-
4	38PL CQ 10 1/2X14 1/2	06P10.5 14.5	4	38	-
5	FRONT FENDER MTG.	641	2	20	-
6	REAR FENDER MTG.	391	2	20	-
7	LOCKNUT, 5/16-13 G5	31LN13G5	52	2	-
8	FENDER BRACE	A269	12	24	-

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REF.				PAGE 2 OF 2

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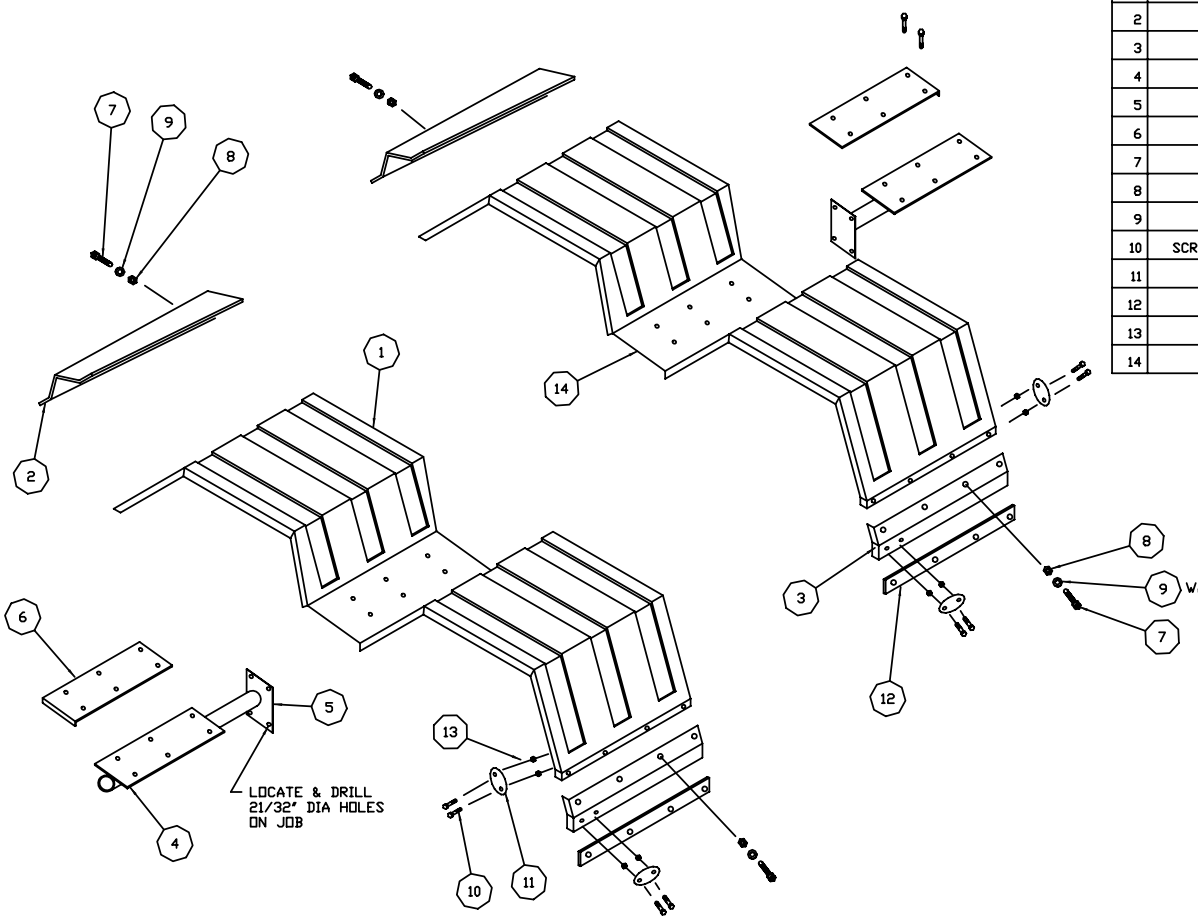
CHANGE DESCRIPTION	ECN DATE	NO.	BY
R1 REDRAWN ON CAD	7/11/95	R1	RBW

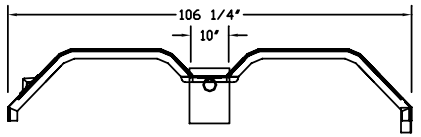
Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING	HOISTS H1	BOOK NO.
SCALE 1" = 1"	REAR FENDER INSTALLATION	18
BY DLB	HOIST	NO.
DATE 2/18/78	W/THIRD PUSHER AXLE	IS0835A



NO.	DESCRIPTION	PART NO.	QTY	WT	
1	FENDER (END)	2136	4	36	
2	FRONT FENDER MTG BRK'T	641	2	20	
3	FILLER, SHORT	AF380	2	24	
4	FENDER BRACE, CENTER	1717W	2	52	
5	3/8PL A36 10 1/2X14 1/2	52P10.5 14.5	2	19	
6	TOP PANEL	G486	2	24	
7	BOLT, 5/16-18X1 G5	31B18G5-100	32	1	
8	LOCKNUT, 5/16-18 G5	31LN18G5	32	1	
9	WASHER, 5/16 G5 USS	31WG5USS	20	1	
10	SCREW,#10-24X1 1/4 PAN HD MACH	8790	8	1	
11	RED OBLONG REFLECTOR	1475	4	2	
12	MUD FLAP BRACKET	432	2	3	
13	NUT,#10-24 G5	10N24G5	8		
14	CENTER MOUNTING STRIP	F495	2	22	

TOTAL WT. = 206.00 lbs



DETAIL A
SCALE 1/30" = 1"

IF CHANGES OCCUR TO THIS DRAWING ALSO CHANGE IS4182

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REF. IS4182 DXF

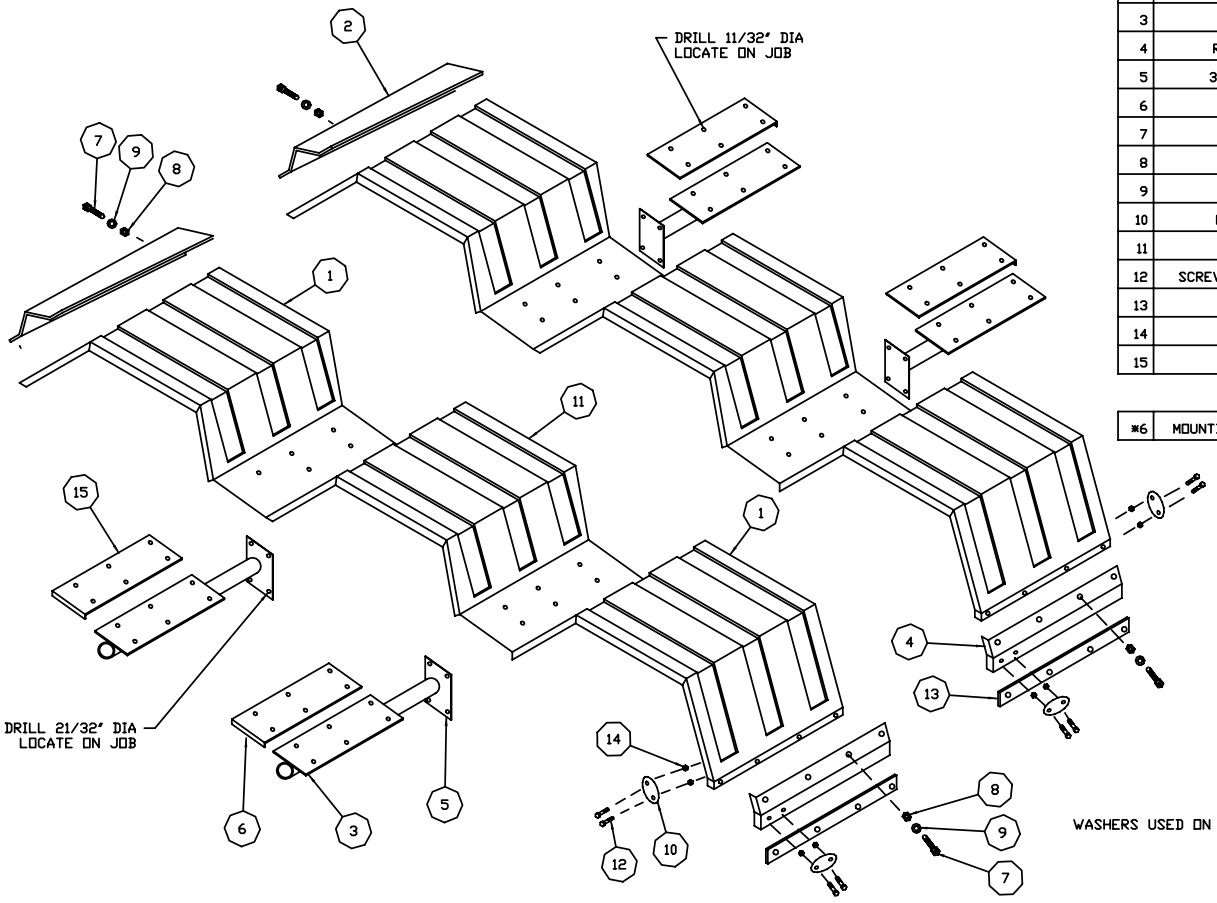
	ECN DATE	NO.	BY
R5 ITEM 3 WAS 391, ADDED ITEM 14	02/05/04	R5	GB
R4 CORRECTED DRAWING	08/10/01	R4	GB
R3 REDRAWN ON CAD	07/01/99	R3	GB

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1" = 1"
BY GEORGE
DATE 3/16/88

HOISTS H
FENDER ASSY, POLY, BLACK 10" SPACING
TANDEM HOIST

BOOK NO. 12
NO. 6912A0



NO.	DESCRIPTION	PART NO.	QTY	WT	
1	FENDER (END)	2136	4	36	
2	FRONT FENDER MTG BRK'T	641	2	20	
3	FENDER BRACE, CENTER	1717W	2	52	
4	REAR MOUNTING BRACKET	391	2	20	
5	3/8PL A36 10 1/2X14 1/2	52P10.5 14.5	2	19	
6	TOP PLATE	G486	2	24	
7	BOLT, 5/16-18X1 G5	31B18G5-100	32	1	
8	LOCKNUT, 5/16-18 G5	31LN18G5	32	1	
9	WASHER, 5/16 G5 USS	31WG5USS	20	1	
10	RED OBLONG REFLECTOR	1475	4	2	
11	FENDER, CENTER	2139	2	19	
12	SCREW,#10-24X1 1/4 PAN HD MACH	8790	8	1	
13	MUD FLAP BRACKET	432	2	3	
14	NUT,#10-24 G5	10N24G5	8		
15	TOP PLATE	J612	2	15	

TOTAL WT. = 214.00 lbs

*6	MOUNTING BRACKET (FOR UX MODEL)	K834	2	27	

IF CHANGES OCCUR TO THID DRAWING ALSO CHANGE IS4183

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REF. IS4183 DXF

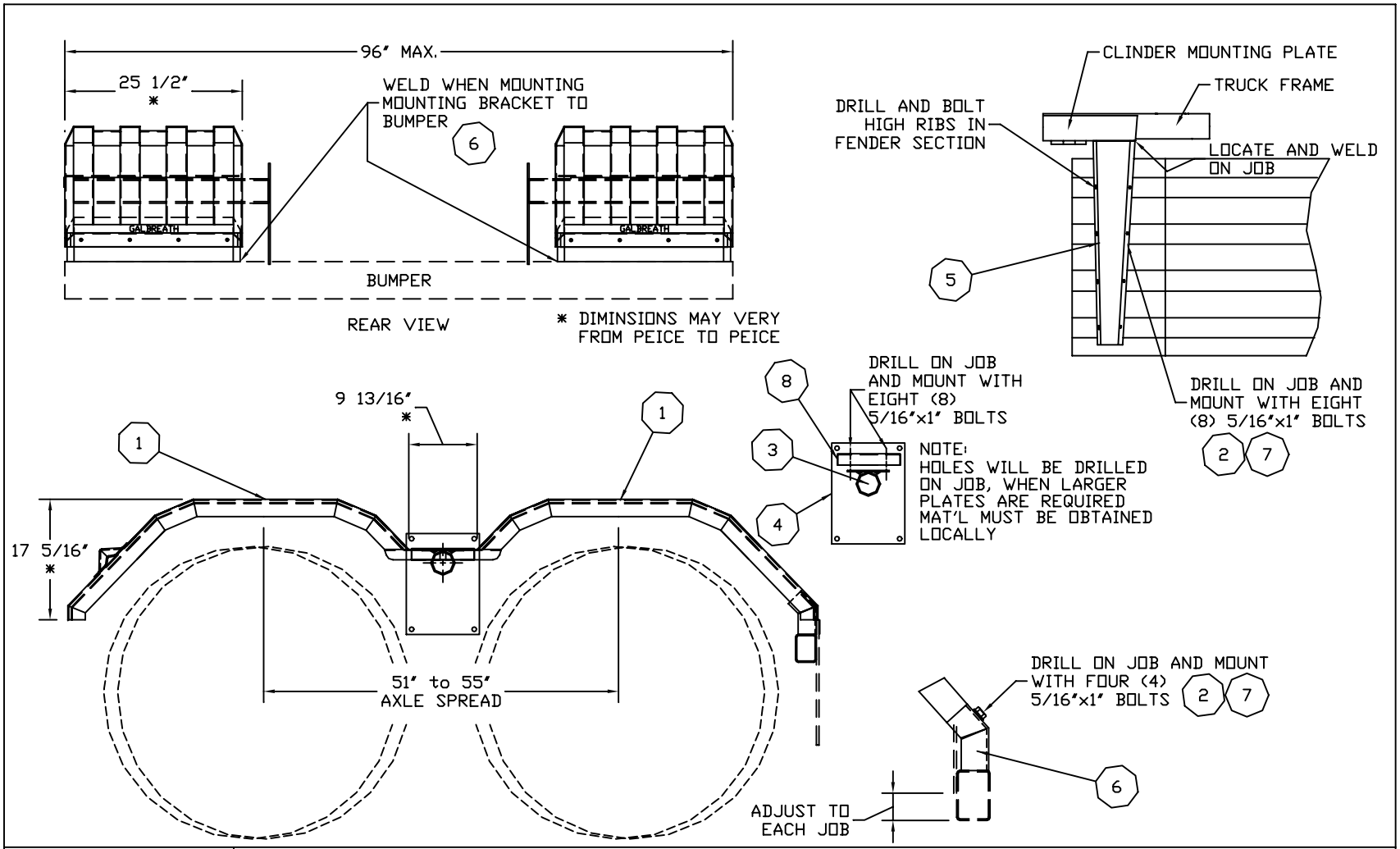
R4 REDRAWN ON CAD	07/01/99	R4	GB	
	ECN DATE	NO.	BY	

GALBREATH INCORPORATED WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1" = 1"
BY GEORGE
DATE 3/16/88

HOISTS H
FENDER ASSEMBLY, POLY, BLACK
TRI-AXLE HOIST

BOOK NO. 12
NO. 6915A0



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			REF.								DXF

			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING SCALE 1/20" = 1" BY HMK DATE 12/02/99	HOISTS H REAR FENDER INSTALLATION FOR POLY FENDERS ON TANDEM HOIST	BOOK NO. 18 NO. IS4384
ECN DATE	NO.	BY				

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	FENDER,CONTOUR SECTION,BLACK	2136	2	15	-
2	BOLT, 5/16-13X1 G5	31B13G5-100	36	4	-
3	BRACE	1717W	2	52	-
4	38PL CQ 101/2X14 1/2	06P10.5 14.5	2	19	-
5	FRONT FENDER MTG.	641	2	20	-
6	REAR FENDER MTG.	391	2	20	-
7	LOCKNUT, 5/16-13 G5	31LN13G5	36	2	-
8	TOP PLATE	G486	2	24	-

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REF.				PAGE 2 OF 2

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CHANGE DESCRIPTION	ECN DATE	NO.	BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

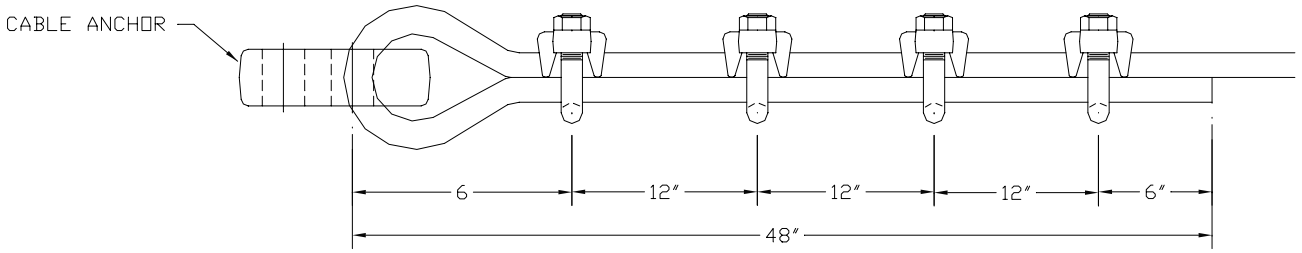
DO NOT SCALE DRAWING	HOISTS H1 REAR FENDER INSTALLATION U- MODEL HOIST	BOOK NO. 18
SCALE 1" = 1"		
BY GEORGE		NO. IS4384A
DATE 12/03/99		

CAUTION: ALWAYS USE 3/4" OR 7/8" DIA. CABLE RESPECTIVELY AS THE HOIST WAS ORIGINALLY EQUIPPED WITH THE FOLLOWING WIRE ROPE CLASSIFICATION: EXTRA IMPROVED PLOW STEEL, 6 X 37 REGULAR RIGHT LAY WITH STEEL CORE (6 X 37 EXIWRC), SWAGED BUTTON END SHOULD BE SUFFICIENT TO WITHSTAND RATED HOIST CAPACITY.

BEFORE INSTALLING NEW CABLE, EXAMINE ALL SHEAVES. REPLACE SHEAVES WHEN NECESSARY.

INSTALL CABLE END ONTO CABLE. THREAD CABLE THROUGH SHEAVES AND GUIDES, ETC. LOOP CABLE THROUGH CABLE ANCHOR AND INSTALL CLAMPS FOLLOWING DIAGRAM BELOW. TORQUE ALL BOLTS EVENLY TO 150 FT. LB. CUT OFF EXCESS CABLE.

CABLE SIZE REQUIRED-SEE MAIN FRAME ASSEMBLY INSERT IN BACK OF MANUAL



ABOVE DIMENSIONS APPROXIMATE

R2 REMOVED CABLE LENGTH CHART
R1 ADDED PART NUMBERS TO CHART

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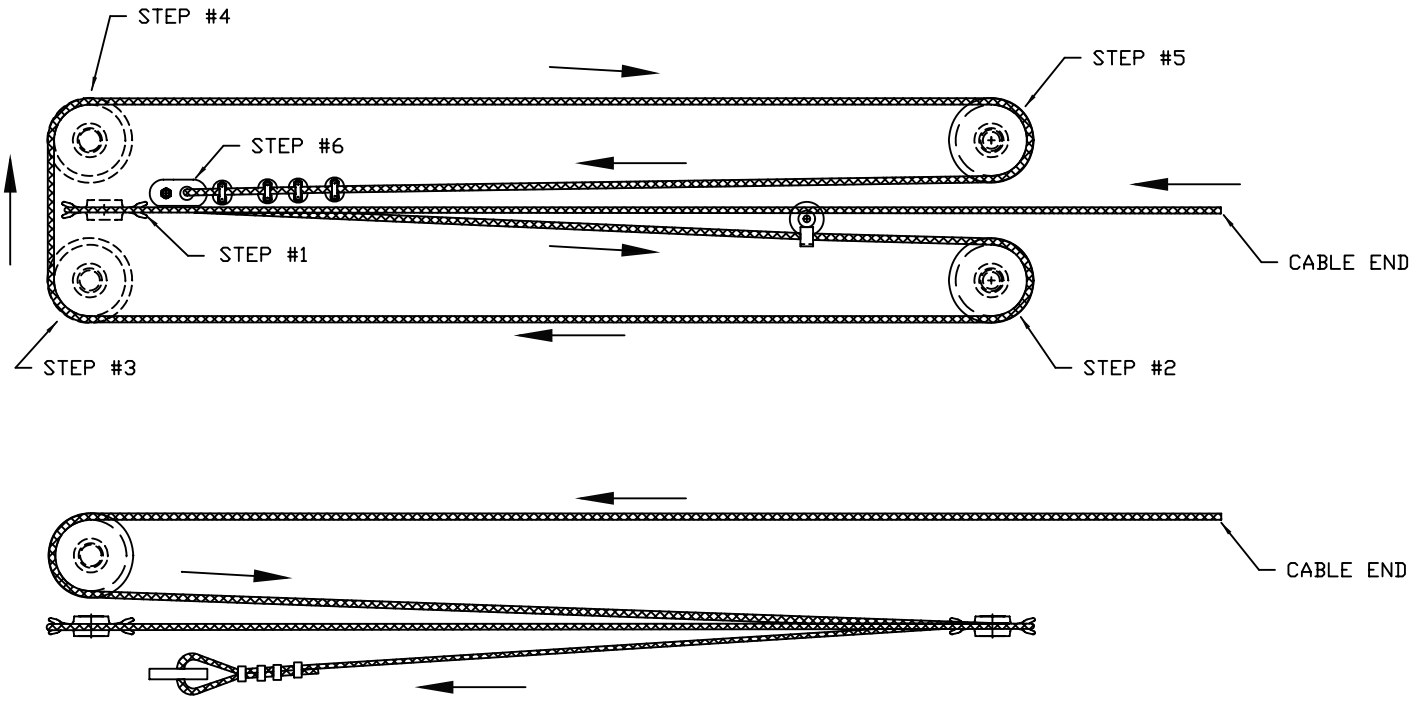
			REF.							DXF
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H1 CABLE REPLACEMENT PROCEDURE HOISTS	BOOK NO. 18				
10/11/01	R2	GB		SCALE 1/6" = 1"						
11/30/99	R1	HMK		BY GEORGE		NO. IS0286				
ECN DATE	NO.	BY		DATE 3/6/89						



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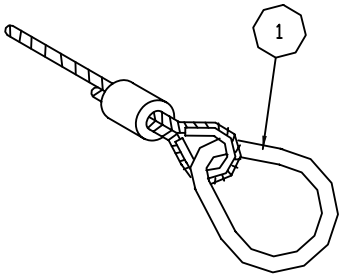
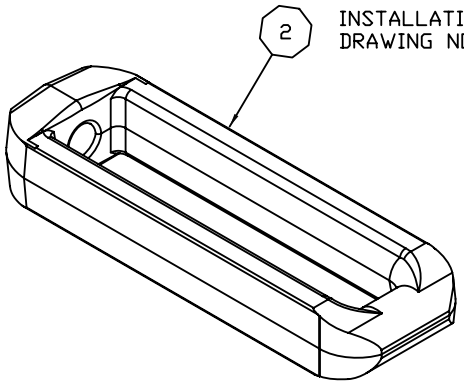
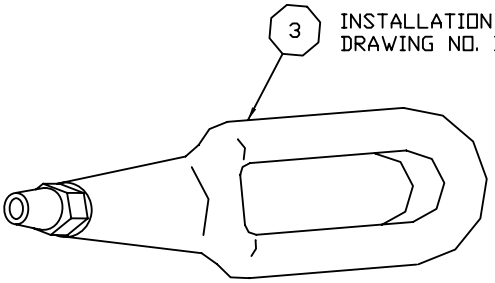
			REF.							DXF
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H1 CABLE LAYOUT ROLL-OFF HOISTS	BOOK NO. 18				
				SCALE 1/20″ =1″						
				BY GAB		NO. IS4009				
ECN DATE	NO.	BY		DATE 12/10/98						

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	CABLE ASS'Y. 7/8"X71' W/PEAR END	4119			-
1	CABLE ASS'Y. 7/8"X78' W/PEAR END	4756			-
2	CABLE END (STANDARD)	3431			-
3	OVAL EYE (3/4")	1041			-
3	OVAL EYE (7/8")	2974			-
4	KNUCKLE HOOK	1404W			-

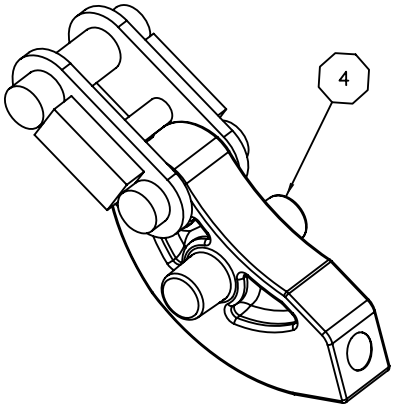




INSTALLATION
DRAWING NO. IS0668



INSTALLATION
DRAWING NO. IS0338



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CHANGE DESCRIPTION	ECN DATE	NO.	BY
R1 REDRAWN ON CAD	06/23/99	R1	GB

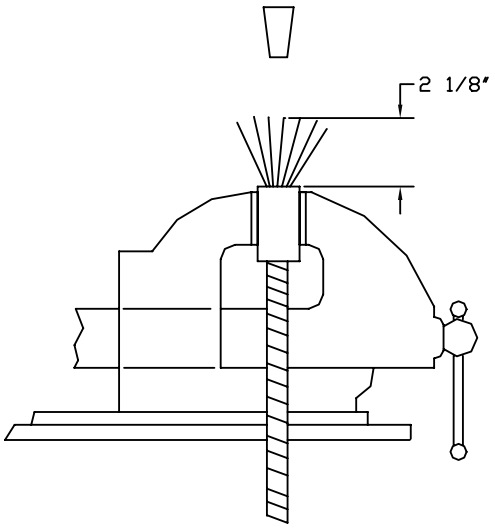
Galbreath
INCORPORATED
WINAMAC, INDIANA

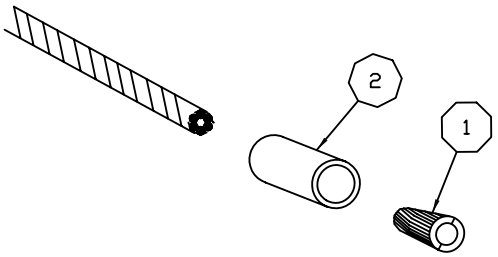
DO NOT SCALE DRAWING
SCALE 1" = 1"
BY GEORGE
DATE 2/15/89

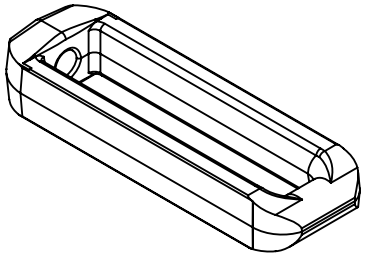
HOISTS H
ACCESSORY PARTS
CABLE ENDS

BOOK NO. 18
NO. IS0670

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	CABLE WEDGE (3/4")	7057			-
1	CABLE WEDGE (7/8")	4768			-
2	CABLE FERRULE (3/4")	7056			-
2	CABLE FERRULE (7/8")	4767			-







1) PLACE DESIRED CABLE END ON CABLE.
2) SLIP CABLE FERRULE OVER CABLE AND CLAMP IN VICE AS SHOWN.
3) REMOVE SEIZING.
4) UNLAY WIRES.
5) SLIP WEDGES OVER THE CENTER AND DRIVE TO A SOLID SEAT.

!! WARNING !!

INSPECT ENTIRE CABLE LENGTH FOR WEAR OR DAMAGE AND REPLACE IF NECESSARY. IF THE CABLE END REQUIRES REPLACEMENT, IT IS POSSIBLE THAT THE ENTIRE CABLE SHOULD BE REPLACED. IF ONLY CABLE END IS REPLACED, CHECK FOR SUFFICIENT REMAINING CABLE LENGTH TO PROPERLY PICK UP CONTAINER. USE CAUTION IN UTILIZING CABLE WEDGE WITH FERRULE AND INSPECT WITH EVERY USE.

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CHANGE DESCRIPTION	ECN DATE	NO.	BY
R2 REDRAWN ON CAD	06/23/99	R2	GB

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1" = 1"
BY GEORGE
DATE 2/16/89

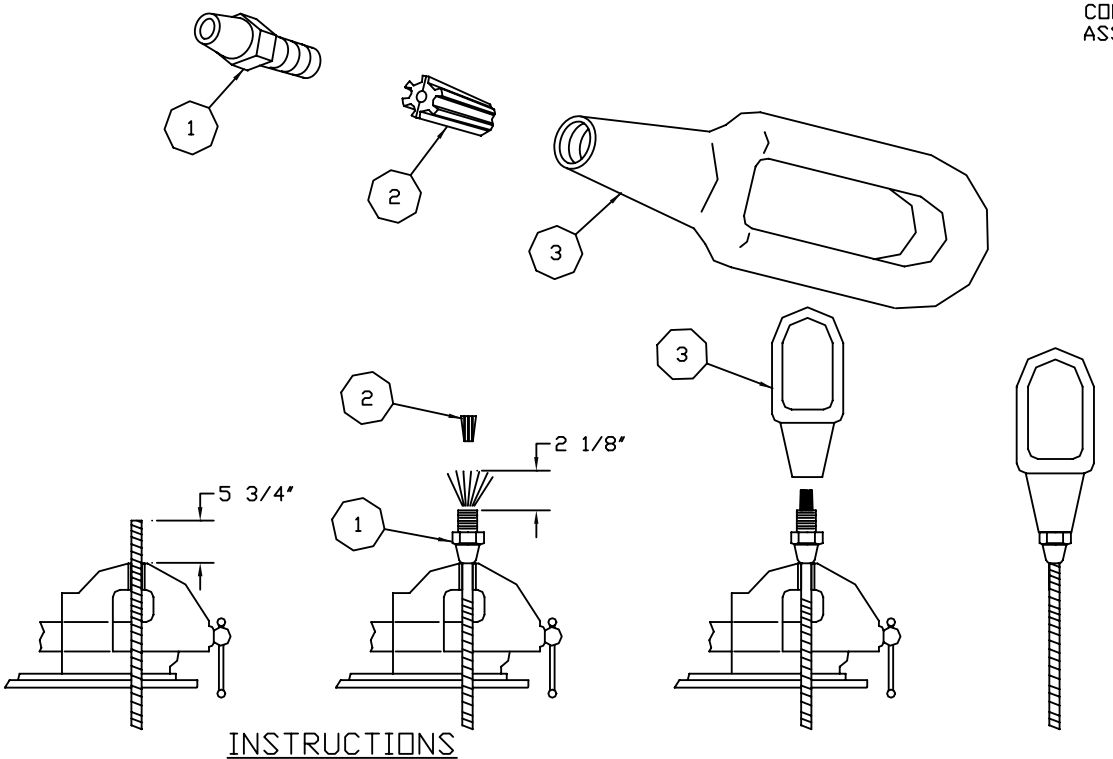
HOISTS H
INSTALLATION INSTRUCTIONS
OF CABLE ENDS

BOOK NO. 18
NO. IS0668

NO.	DESCRIPTION	PART NO.	QTY	WT		
1	SLEEVE (3/4")	1106			–	1041
2	PLUG,FLUTED (3/4")	1105			–	
3	OVAL EYE (3/4")	3402			–	

1	SLEEVE (7/8")	2976			–	2974
2	PLUG,FLUTED (7/8")	3400			–	
3	OVAL EYE (7/8")	3403			–	

COMPLETE ASSEMBLY



INSTRUCTIONS

1) CLAMP CABLE IN VICE AS SHOWN.
2) REMOVE SEIZING.
3) SLIP SLEEVE OVER CABLE.
4) UNLAY WIRES.
5) SLIP PLUG OVER THE CENTER AND DRIVE TO A SOLID SEAT.
6) BEND WIRES INWARD.
7) ATTACH SOCKET TO SLEEVE AND TIGHTEN SECURELY.
8) STRAND CAN BE SEEN IN INSPECTION HOLE IF APPLIED PROPERLY.
9) SEVERAL THREADS WILL BE EXPOSED AFTER TIGHTENING.

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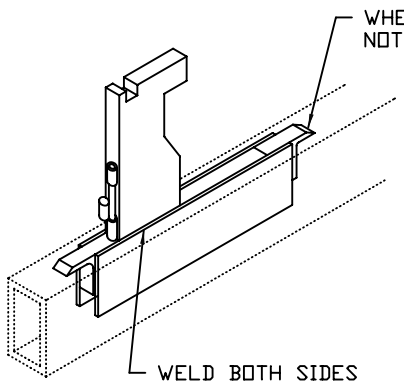
CHANGE DESCRIPTION	ECN DATE	NO.	BY
R1 REDRAWN ON CAD	06/23/99	R1	GB

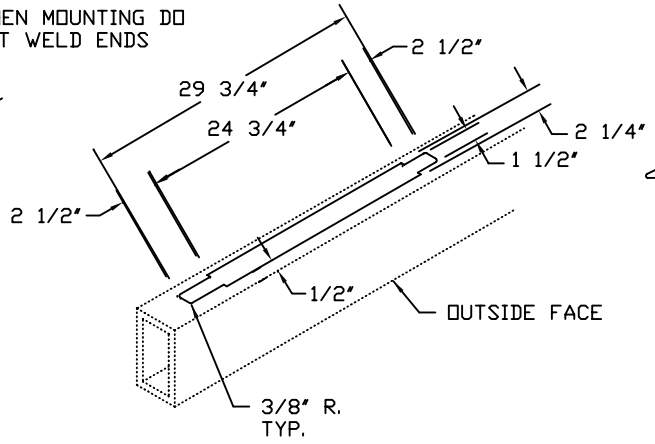
Galbreath
INCORPORATED
WINAMAC, INDIANA

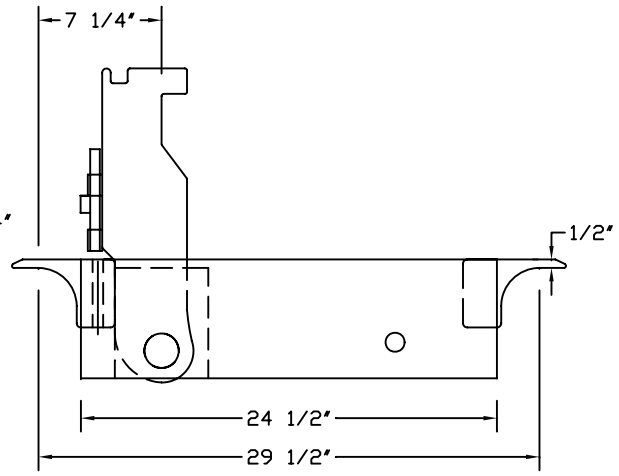
DO NOT SCALE DRAWING
SCALE 1" = 1"
BY GEORGE
DATE 2/15/89

HOISTS H
INSTALLATION INSTRUCTIONS
OF OVAL EYE SOCKET

BOOK NO. 18
NO. IS0338







SEE IS0381 TO DETERMINE STOP LOCATION.

BURN 29 3/4" LONG SLOT IN TOP OF HOIST FRAME 1/2" FROM OUTSIDE FACE.

LEAVE 3/8" RADIUS ON CORNERS OF SLOT.

ALLOW 7 5/8" FROM FRONT OF SLOT TO DESIRED STOP LOCATION.

SET STOP ASS'Y INTO SLOT, CHECK STOP LOCATION AND WELD FULL LENGTH BOTH SIDES. DO NOT WELD ENDS.

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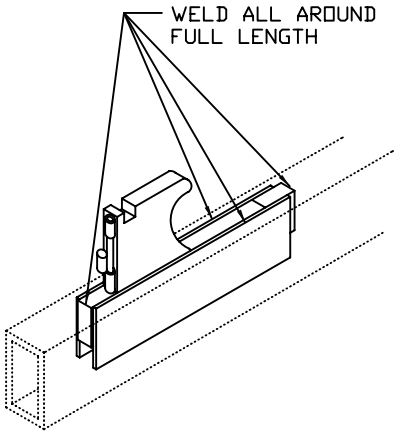
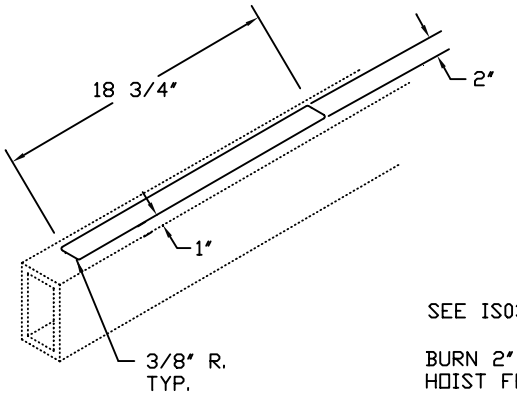
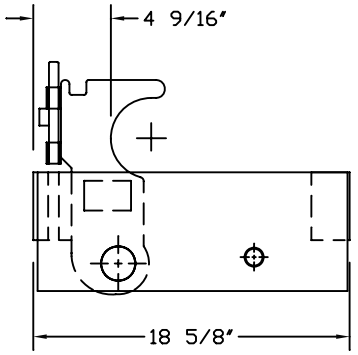
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H FOLD DOWN STOP INSTALLATION HH MODEL HOIST (2341W)	BOOK NO. 18
				SCALE 1/10" = 1"		
				BY GEORGE		NO. IS0256
ECN DATE	NO.	BY		DATE 07/09/99		







SEE IS0378 OR IS0380 TO DETERMINE STOP LOCATION.

BURN 2" X 18 3/4" LONG SLOT IN TOP OF HOIST FRAME ON CENTER.

LEAVE 3/8" RADIUS ON CORNERS OF SLOT.

ALLOW 4 5/8" FROM FRONT OF SLOT TO DESIRED STOP LOCATION.

SET STOP ASS'Y INTO SLOT, CHECK STOP LOCATION AND WELD FULL LENGTH ALL AROUND.

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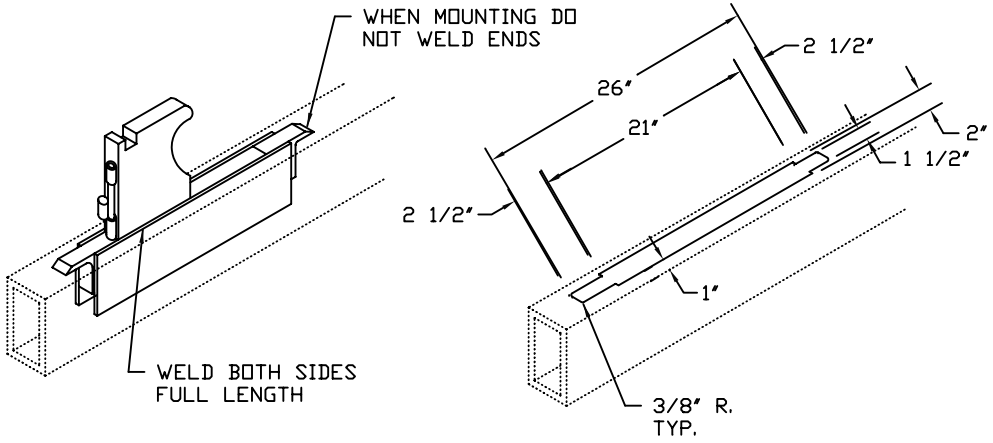
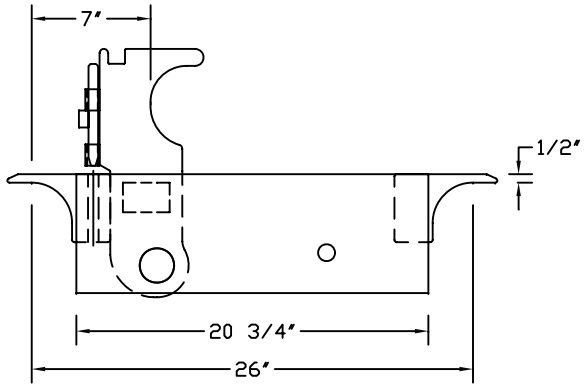
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING	HOISTS H FOLD DOWN STOP INSTALLATION OR & EX MODEL HOIST (2339W)			BOOK NO. 18		
					SCALE 1/10" = 1"				NO. IS0257		
					BY GEORGE						
ECN DATE	NO.	BY			DATE 07/09/99						





SEE IS0379 TO DETERMINE STOP LOCATION.

BURN 26" LONG SLOT IN TOP OF HOIST FRAME ON CENTER.

LEAVE 3/8" RADIUS ON CORNERS OF SLOT.

ALLOW 7" FROM FRONT OF SLOT TO DESIRED STOP LOCATION.

SET STOP ASS'Y INTO SLOT, CHECK STOP LOCATION AND WELD FULL LENGTH BOTH SIDES. DO NOT WELD ENDS.

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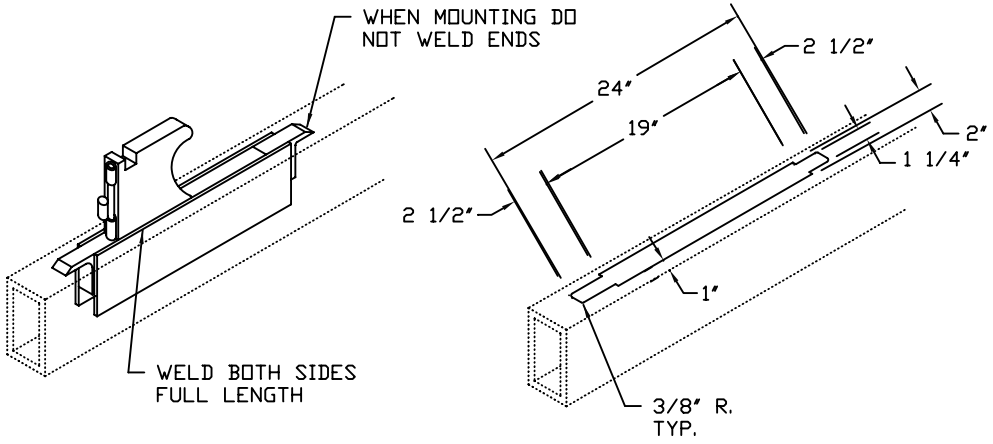
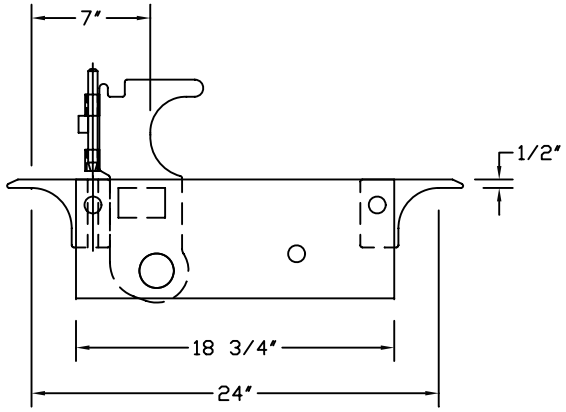
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING	HOISTS H FOLD DOWN STOP INSTALLATION ID MODEL HOIST (2340W)		BOOK NO. 18			
					SCALE 1/10" = 1"						
					BY GEORGE			NO. IS0258			
ECN DATE	NO.	BY			DATE 07/09/99						





BURN 24" LONG SLOT IN TOP OF HOIST FRAME ON CENTER.

LEAVE 3/8" RADIUS ON CORNERS OF SLOT.

ALLOW 7" FROM FRONT OF SLOT TO DESIRED STOP LOCATION.

SET STOP ASS'Y INTO SLOT, CHECK STOP LOCATION AND WELD FULL LENGTH BOTH SIDES. DO NOT WELD ENDS.

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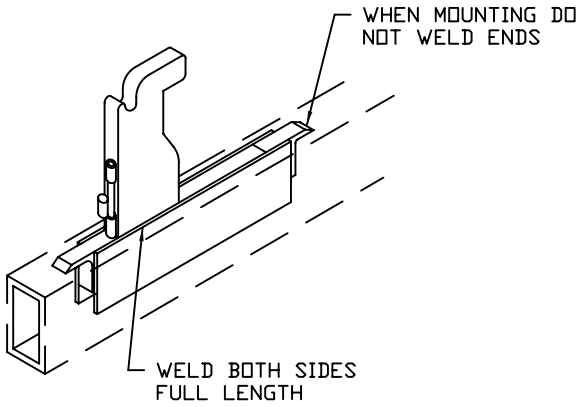
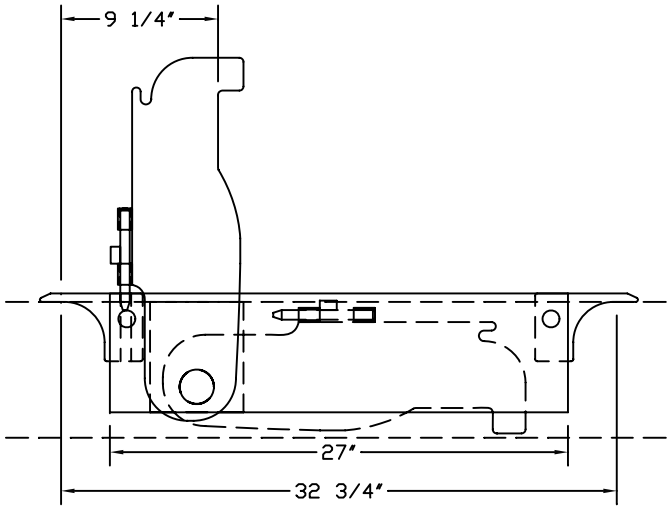
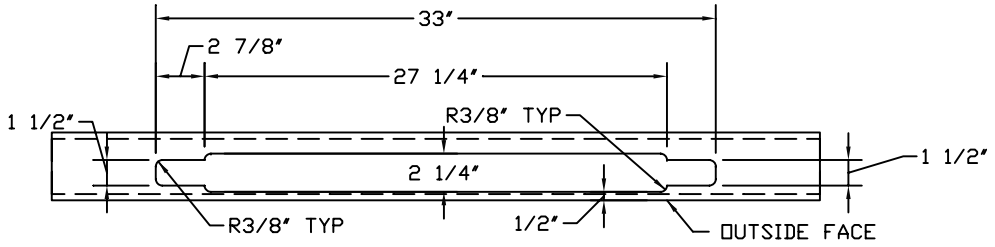
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING	HOISTS H FOLD DOWN STOP INSTALLATION DL MODEL HOIST (2502W)			BOOK NO. 18	
					SCALE 1/10" = 1"					
					BY GEORGE				NO. IS0259	
ECN DATE	NO.	BY			DATE 07/09/99					







OPENING DETAIL

BURN 33" LONG SLOT IN TOP OF HOIST FRAME 1/2" FROM OUTSIDE FACE.

LEAVE 3/8" RADIUS ON CORNERS OF SLOT.

ALLOW 9 1/4" FROM FRONT OF SLOT TO DESIRED STOP LOCATION.

SET STOP ASS'Y INTO SLOT, CKECK STOP LOCATION AND WELD FULL LENGTH BOTH SIDES. DO NOT WELD ENDS.

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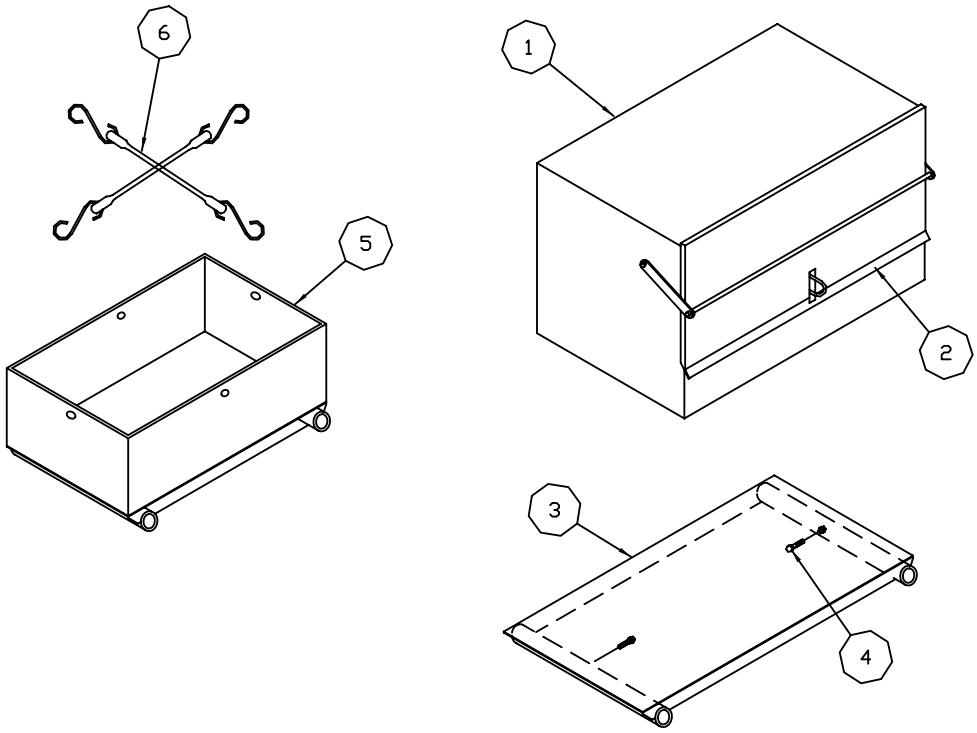
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA		DO NOT SCALE DRAWING	HOISTS H FOLD DOWN STOP INSTALLATION SI MODEL HOIST (2501W)			BOOK NO. 18	
					SCALE 1/10" = 1"					
					BY HMK				NO. IS2700	
ECN DATE	NO.	BY			DATE 12/01/99					

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	TOOL BOX 20" X 16" X 24"	936A0			-
1	TOOL BOX 20" X 16" X 48"	4395A0			-
2	TOOL BOX DOOR ONLY (24")	633			-
2	TOOL BOX DOOR ONLY (48")	B893			-
3	MOUMTING BASE (24")	0339B0			-
3	MOUNTING BASE (48")	1766W			-
4	BOLT,1/2-13X1 G5	50B13G5-100			-
5	TARP BOX	0725B0			-
6	TARP STRAP,10" W/HOOKS	2484			-



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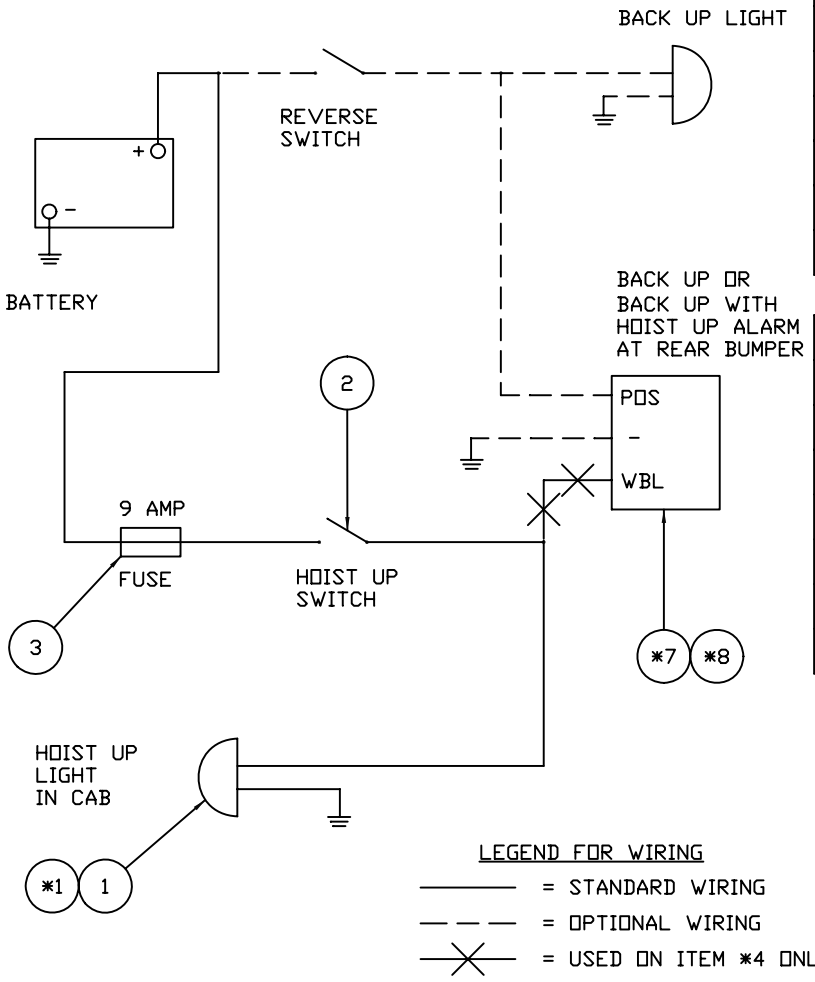
CHANGE DESCRIPTION	ECN DATE	NO.	BY
R2 REDRAWN ON CAD	06/23/99	R2	GB

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1" = 1"
BY GEORGE
DATE 2/15/89

HOISTS H
ACCESSORY PARTS
TOOL & TARP BOX

BOOK NO. 18
NO. IS0303



LEGEND FOR WIRING

= STANDARD WIRING

= OPTIONAL WIRING

= USED ON ITEM *4 ONLY

STANDARD PARTS			QTY
1	9381	HOIST UP LIGHT	1
2	9591	HOIST UP SWITCH	1
3	4281	FUSE HOLDER W/ 9 AMP FUSE	1
4	4226	TERMINAL,RING #10 1/-14 AWG	2
5	9289-240	CABLE,#16-2XL 12-24V X 240	1
6	9599	DECAL,"CAUTION-HOIST UP"	1

OPTIONAL PARTS			
*1	A1762	HOIST UP LIGHT/ALARM	1
*4	4226	TERMINAL,RING #10 1/-14 AWG	3
*5	9289-240	CABLE,#16-2XL 12-24V X 240	1
*7	A1757	BACK UP ALARM/HOIST UP ALARM	1
*8	9592	BACK UP ALARM	1
*9	25B20G5-75	BOLT,1/4-20X3/4 G5	4
*10	25WG5USS	WASHER 1/4 G5 USS	4

1- HOIST UP VISUAL WARNING LIGHT IN CAB.

*1- OPTIONAL HOIST UP VISUAL WARNING LIGHT WITH AUDIBLE ALARM IN CAB.

*4- HOIST UP AUDIBLE ALARM AND BACK UP AUDIBLE ALARM (A1757) LOCATED AT REAR OF HOIST. NOTE: THIS ALARM HAS TWO DISTINCT AUDIBLE SOUNDS, A BACK UP AUDIBLE PULSE AND A PULSED WARBLE SOUND FOR THE HOIST UP WARNING.

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			REF.					ZK E7	DXF

ECN DATE	NO.	BY

Galbreath
INCORPORATED
WINAMAC, INDIANA

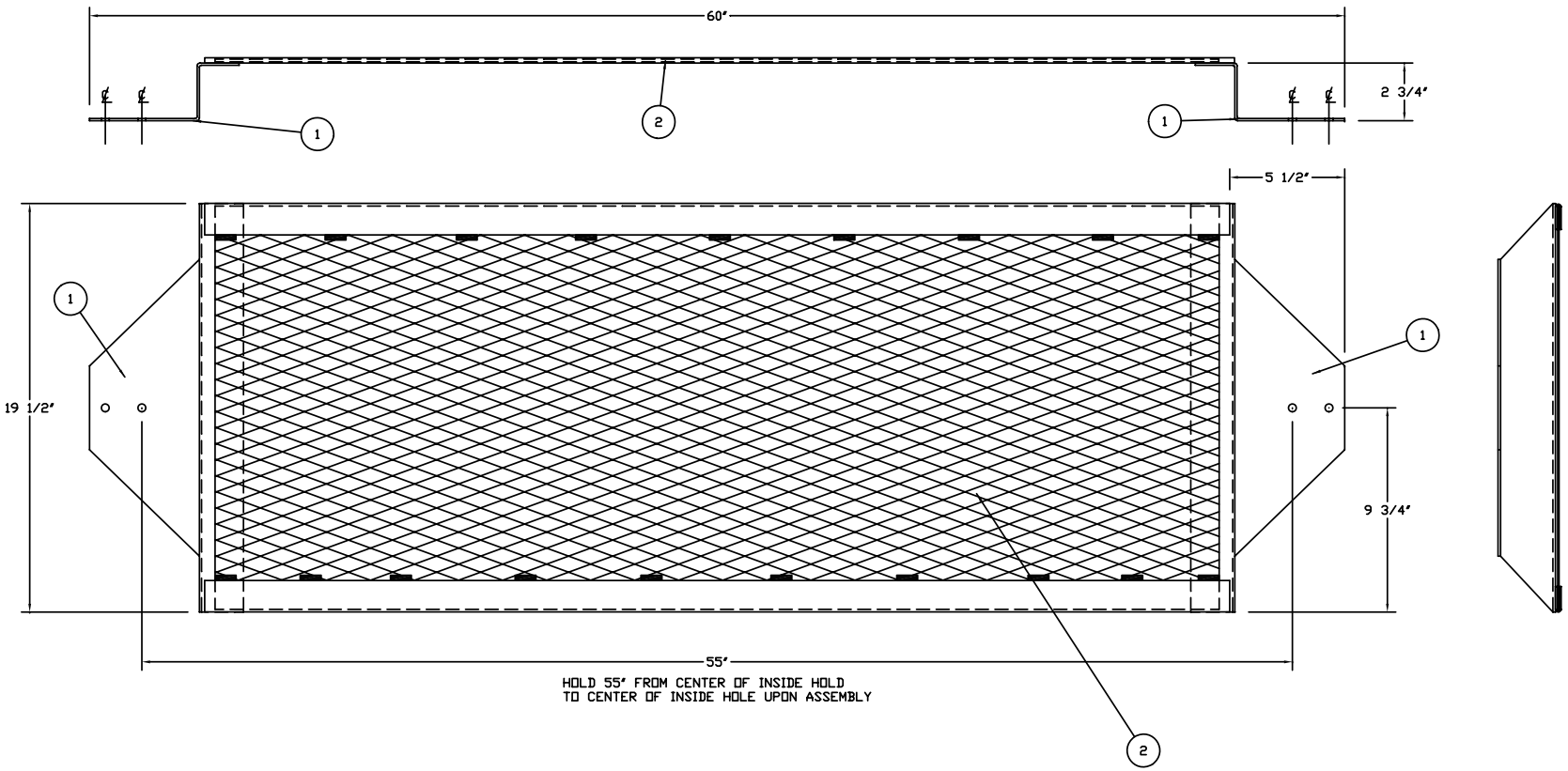
DO NOT SCALE DRAWING
SCALE 1" = 1"
BY GEORGE
DATE 04/08/96

HOISTS H
ELECTRICAL SCHEMATIC
FOR HOIST UP ALARMS
AND BACK UP ALARM

BOOK NO. 18
NO. IS2079

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	MOUNTING BRACKET	B886	2	9	-
2	SCREEN ASSEMBLY	2283W	1	11	-

TOTAL WEIGHT = 20#



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REF. 2399W

DXF

ECN DATE	NO.	BY

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WINAMAC, INDIANA

DO NOT SCALE DRAWING
SCALE 1/5" = 1"
BY GEORGE
DATE 7/8/99

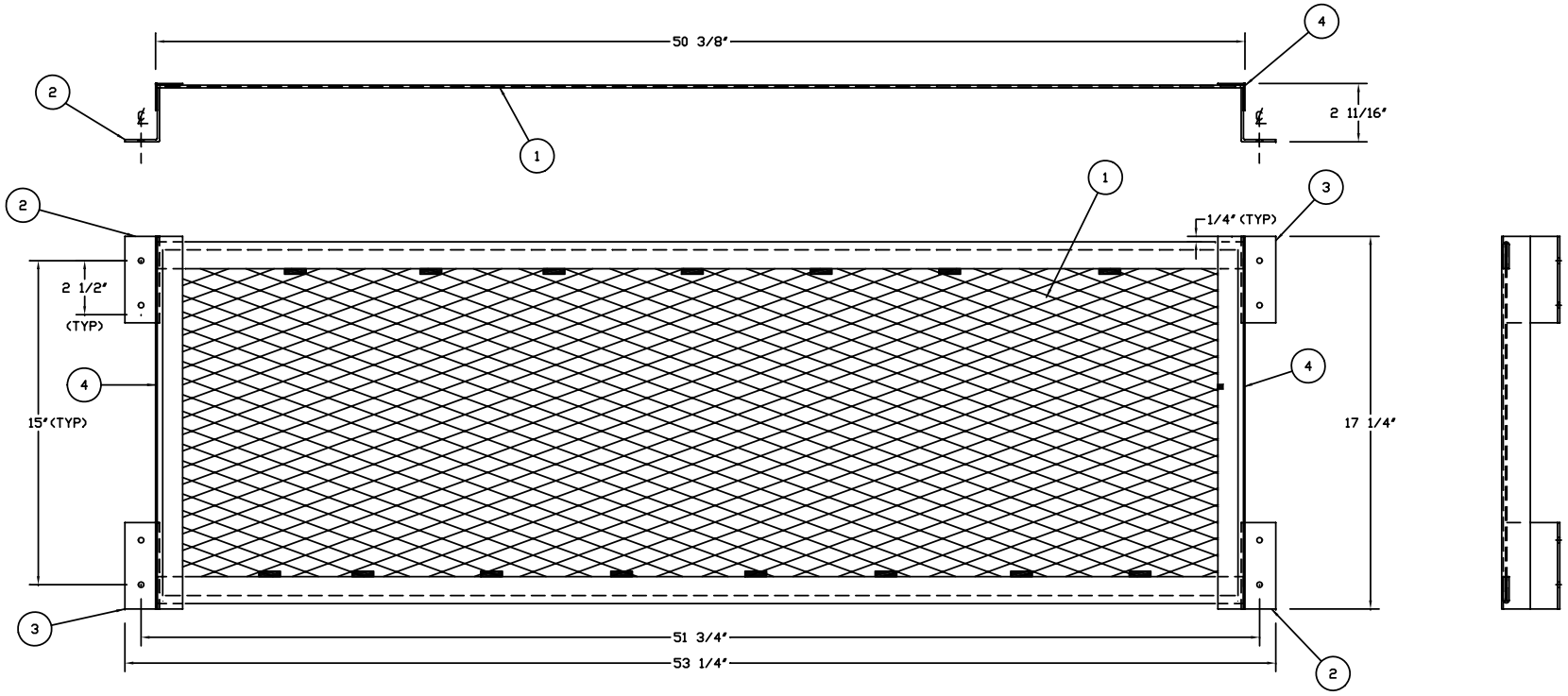
HOISTS H
REAR WINDOW SCREEN ASS'Y
HOISTS
D.M. MACK

BOOK NO. 18

NO. IS4184

NO.	DESCRIPTION	PART NO.	QTY	WT	
1	SCREEN WELDMENT	2400W	1	10	-
2	MOUNTING BRACKET	B974	2	2	-
3	MOUNTING BRACKET	F762	2	2	-
4	SIDE BRACKET	B979	2	2	-

TOTAL WEIGHT = 16#



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REF. 2398W

DXF

ECN DATE	NO.	BY

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WINAMAC, INDIANA

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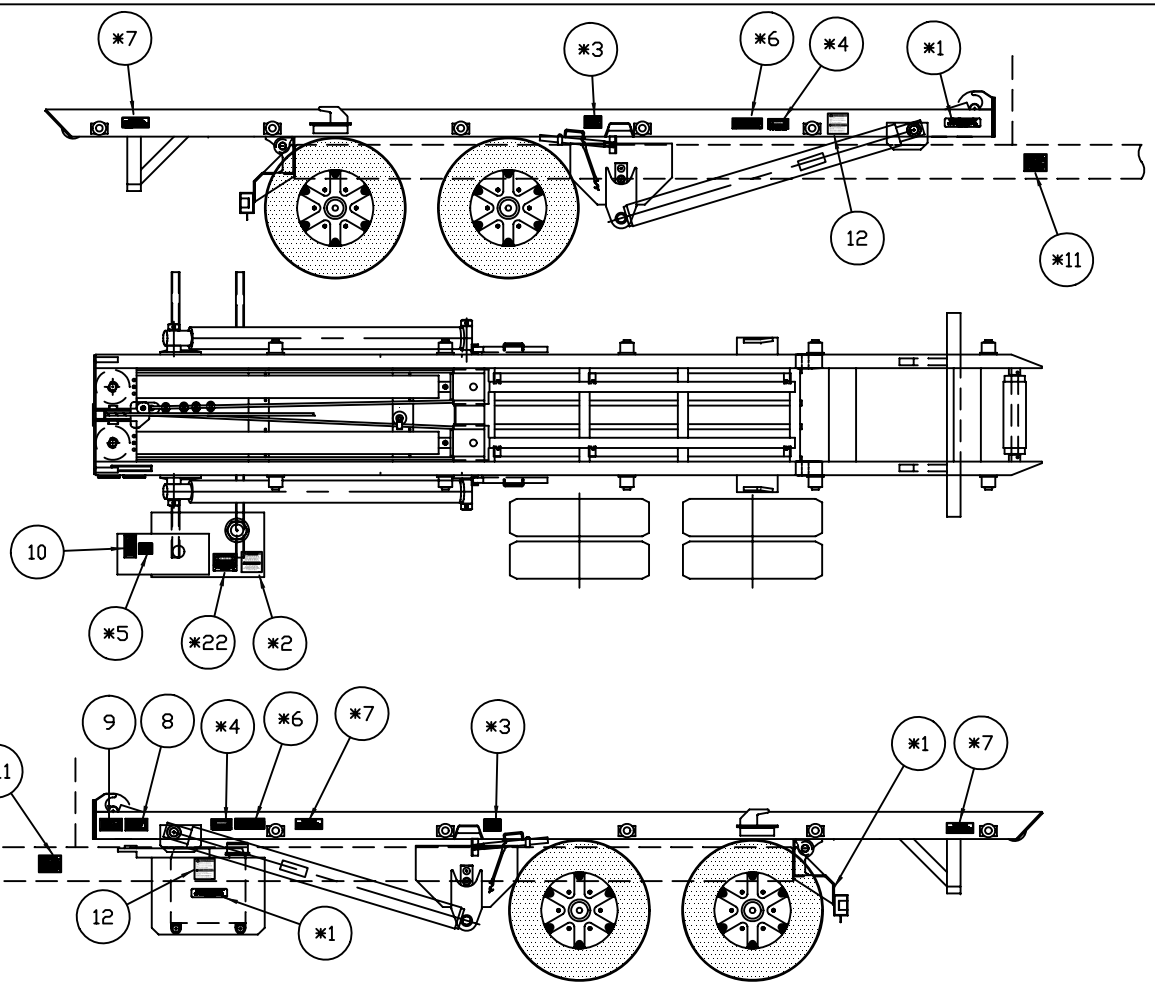
SCALE 1/5" = 1"
BY GEORGE
DATE 7/8/99

HOISTS H
"UNIVERSAL" REAR WINDOW SCREEN
HOISTS

BOOK NO. 18
NO. IS4191

DECALS LOCATED INSIDE THE CAB

*(5) CAB/DASH & SIDE BY CONTROLS
*(13) INSIDE CAB
*(14) CAB/DASH
*(15) ON LEVERS OR LEVER MT'G BRK'T INSIDE CAB
*(16) ON LEVERS OR LEVER MT'G BRK'T INSIDE CAB
*(17) ON LEVERS OR LEVER MT'G BRK'T INSIDE CAB
*(18) CAB/DASH
(19) TRUCK CERTIFICATION INSIDE OF DOOR
(20) POWER TAKE OFF/NEAR PTO CONTROL
(21) POWER TAKE OFF/SUN VISOR
*(23) CAB/DASH
(24) IN FRONT OF TRUCK



* NOTE: THESE ARE PART OF A3483 DECAL KIT, CABLE HOIST.

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			REF. A3483	IS4125							DXF
11/04/04	R3	GB	Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H1 DECAL LOCATIONS ROLL OFF HOISTS					BOOK NO. 18	
01/31/01	R2	GB		SCALE 1/50" = 1"							
05/18/00	R1	GB		BY GEORGE						NO. IS4125	
ECN DATE	NO.	BY		DATE 5/11/99							

	NO.	DESCRIPTION	PART NO.	QTY	WT	
*	1	DECAL,"GALBREATH-ORDER GENUINE	9568	3		-
*	2	DECAL,"WARNING-DO NOT OPERATE	3562	1		-
*	3	DECAL,"HOIST PROP OPER"	4609	2		-
*	4	DECAL,"DANGER"	3313	1		-
*	5	DECAL,"HOIST USAGE INSTR" (IN CAB)	3317	2		-
*	6	DECAL,"WARNING HST MUST"	9152	2		-
*	7	DECAL,"CAUTION"	3312	4		-
	8	NAMEPLATE "HOIST USAGE"	3316	1		-
	9	NAMEPLATE,ANSI MOBILE/COMP ID	3314	1		-
	10	NAMEPLATE "OPER. TAG" (TRK)	3315	1		-
*	11	DECAL,"WARNING-ROTATING SHAFTS	2107	2		-
	12					
*	13	DECAL PTO WARNING (IN CAB)	9850	1		-
*	14	DECAL,"CAUT,DO NOT EXCEED 1600 (CAB)	3368	1		-
*	15	DECAL,"TAIL IN-OUT" (IN CAB)	3393	1		-
*	16	DECAL,"WINCH ON-OFF (IN CAB)	3394	1		-
*	17	DECAL,"HOIST RAISE-LOWER" (IN CAB)	3395	1		-
*	18	DECAL,"HOIST WARNING HST MUST" (CAB)	9154	1		-
	19	TRUCK CERT. (INSIDE OF DOOR)	-	1		-
	20	MUNCIE DECAL, POWER TAKE OFF	-	1		158432-2A
	21	MUNCI DECAL, POWER TAKE OFF, (VISOR)	-	1		158432-2B
*	22	DECAL,DON'T DUMP/HIGH WINDS	A1210	1		-
*	23	DECAL,"CAUTION - HOIST UP" (IN CAB)	9599	1		-
	24	LICENSE PLATE:"GALBREATH"	8966	1		-

* NOTE: THESE ARE PART OF A3483 DECAL KIT, CABLE HOIST.

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REF.				PAGE 2 OF 2

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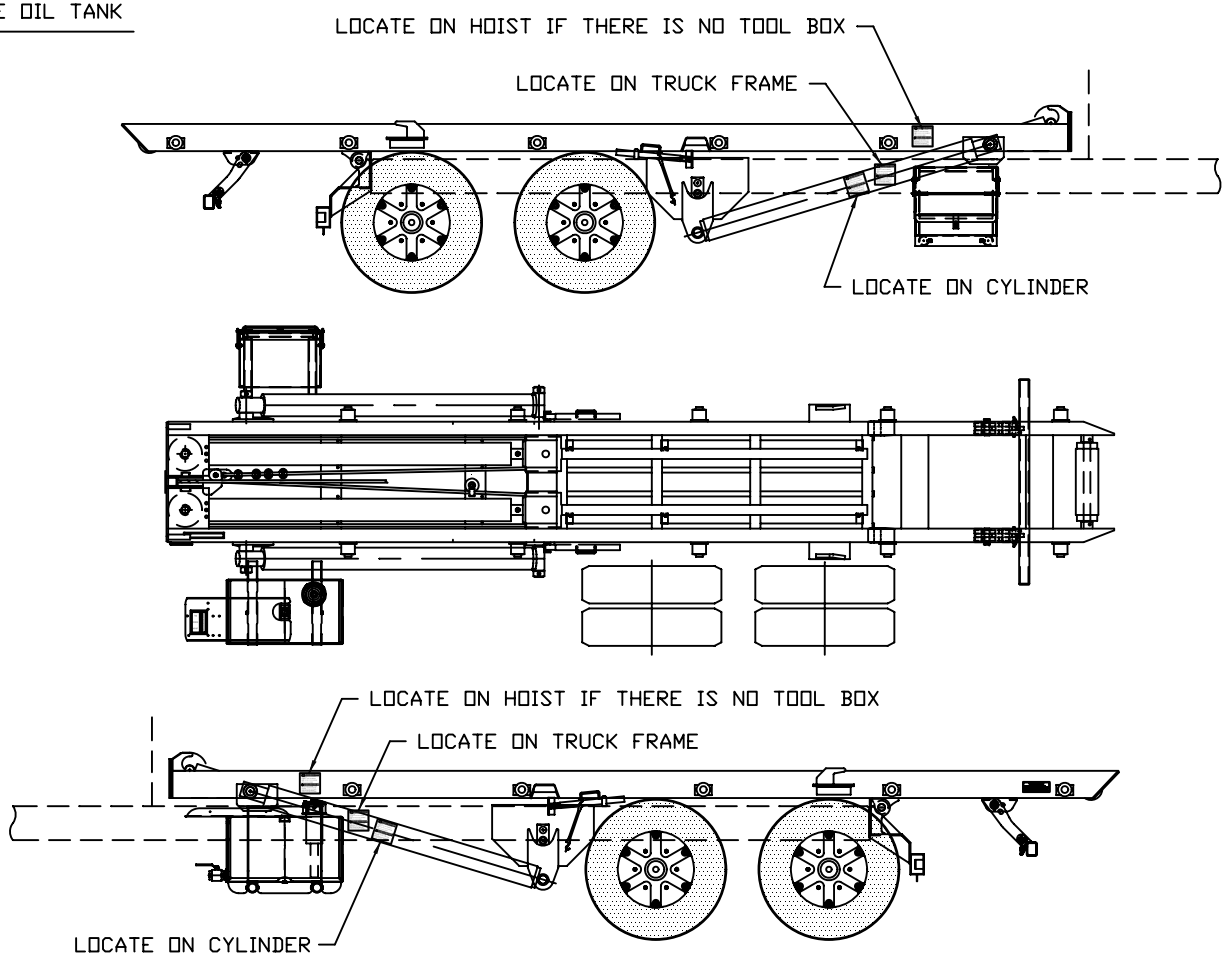
CHANGE DESCRIPTION	ECN DATE	NO.	BY
	01/31/01	R2	GB

Galbreath
INCORPORATED
WINAMAC, INDIANA

DO NOT SCALE DRAWING	HOISTS H5 DECAL LOCATIONS ROLL OFF HOIST	BOOK NO. 18
SCALE 1" = 1"		
BY GEORGE		NO. IS4125-1
DATE 5/11/99		

6 DECALS REQUIRED WITH NEW STYLE OIL TANK


LOCATE ON HOIST IF THERE IS NO TOOL BOX
LOCATE ON TRUCK FRAME
LOCATE ON CYLINDER
LOCATE ON HOIST IF THERE IS NO TOOL BOX
LOCATE ON TRUCK FRAME
LOCATE ON CYLINDER

R1 REMOVED TANK END VIEW

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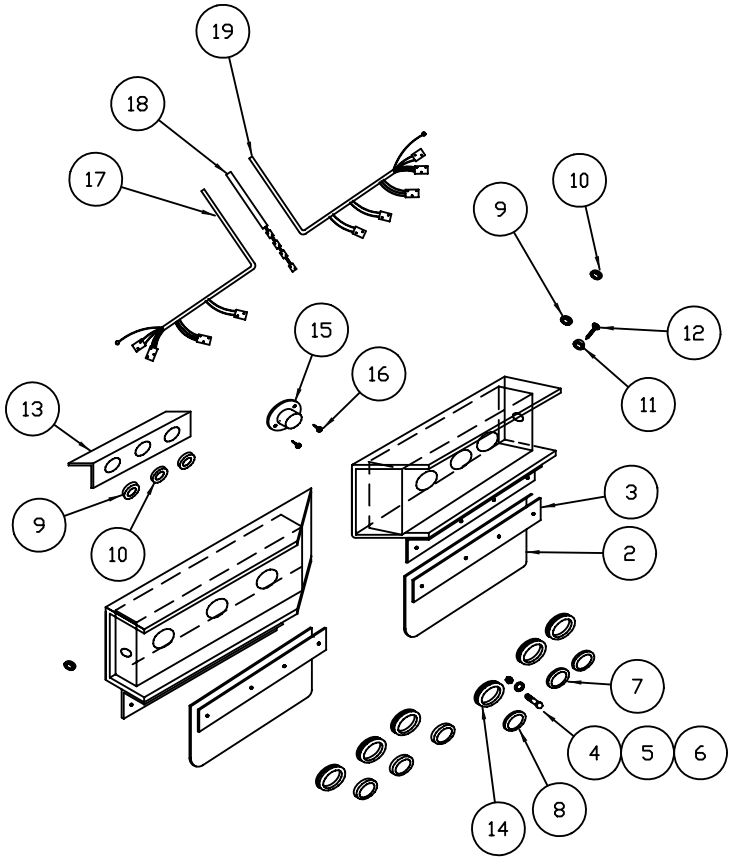
			REF.								DXF
			Galbreath INCORPORATED WINAMAC, INDIANA	DO NOT SCALE DRAWING	HOISTS H1 A4729 DECAL LOCATION ROLL OFF HOISTS NEW OIL TANK	BOOK NO. 18					
				SCALE 1/50″ = 1″							
02/18/05	R1	GB		BY GEORGE		NO. IS7090					
ECN DATE	NO.	BY		DATE 11/4/04							



NO.	DESCRIPTION	PART NO.	QTY	WT
1	BUMPER	2258W	1	-
2	MUD FLAP	8957	2	-
3	BRACKET, MUD FLAP	432	2	-
4	BOLT, 5/16-18X1 G5	31B18G5-100	8	-
5	WASHER, 5/16 G5 USS	31WG5USS	8	-
6	LOCKNUT, 5/16-18 G5	31LN18G5	8	-
7	RECESSED LIGHT (RED)	4448	4	-
8	BACK UP LIGHT	4449	2	-
9	CLEARENCE LIGHT (RED)	4452	5	-
10	MOUNTING GROMMET	4454	5	-
11	ROUND REFLECTOR (RED)	1472	2	-
12	METAL SCREW # 12 X 5/8"	3013	2	-
13	BRACKET, 3 LIGHT	378	1	-
14	RUBBER GROMMET	4797	6	-
15	LIGHT, LICENSE PL W/ BRKT	9594	1	-
16	HEX W/H SELF TAP 1/4-20 X 3/4	4519	2	-
17	WIRING HARNESS (L.H.)	A1246	1	-
18	WIRING HARNESS (I.D. & MARKERS)	A1244	1	-
19	WIRING HARNESS (R.H.)	A1247	1	-

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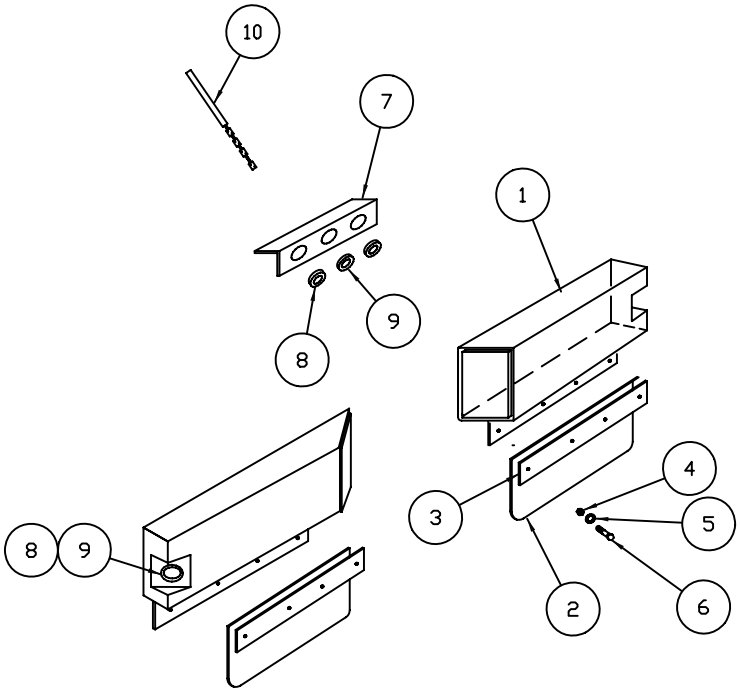
HOISTS H1
BUMPER W/RECESSED LIGHTS
HOISTS WITH PINTLE HOOK

BOOK NO. 18
NO. IS4129



NO.	DESCRIPTION	PART NO.	QTY	WT
1	BUMPER	2264W	1	-
2	MUD FLAP	8957	2	-
3	BRACKET, MUD FLAP	432	2	-
4	BOLT, 5/16-18X1 G5	31B18G5-100	8	-
5	WASHER, 5/16 G5 USS	31WG5USS	8	-
6	LOCKNUT, 5/16-18 G5	31LN18G5	8	-
7	BRACKET, 3 LIGHT	378	1	-
8	CLEARENCE LIGHT (RED)	4452	5	-
9	MOUNTING GROMMET	4454	5	-
10	WIRING HARNESS (I.D. & MARKERS)	A1244	1	-

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HOISTS H1
BUMPER, SPLIT, STANDARD
HOIST WITH PINTLE HOOK

BOOK NO. 18
NO. IS4130

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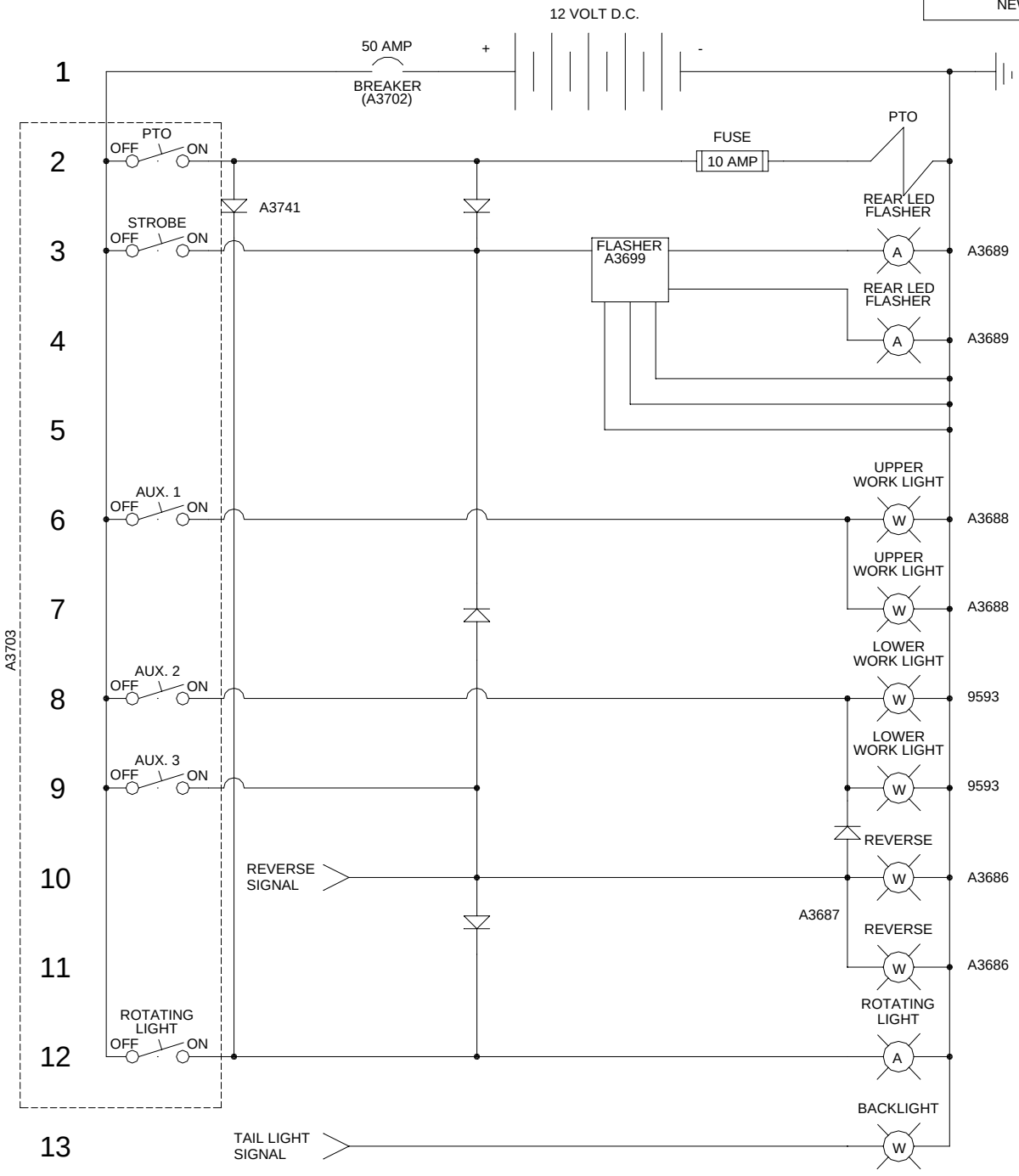
BOOK NO.	42
DRAWING NO.	TE0027
DATE	11/21/01
DRAWN BY	SVS
REVISION	NEW

ELECTRICAL SCHEMATIC FOR SAFETY/VISIBILITY PACKAGE OPTION



REMARKS: